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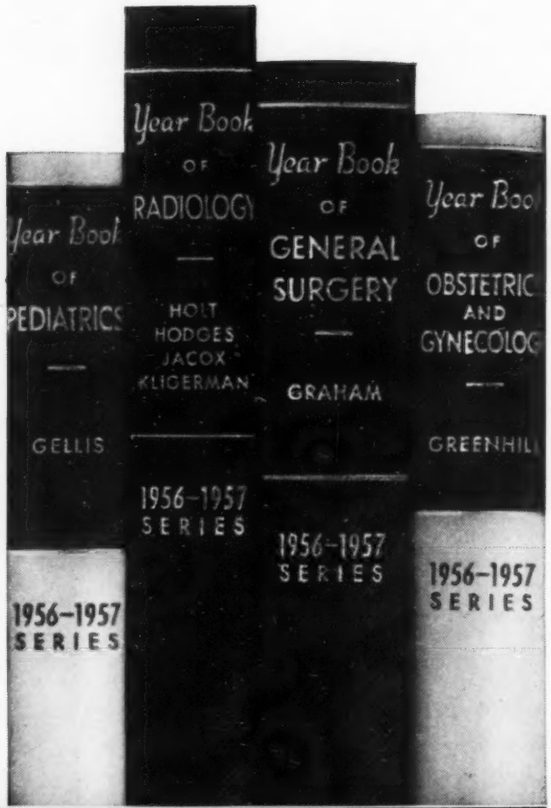

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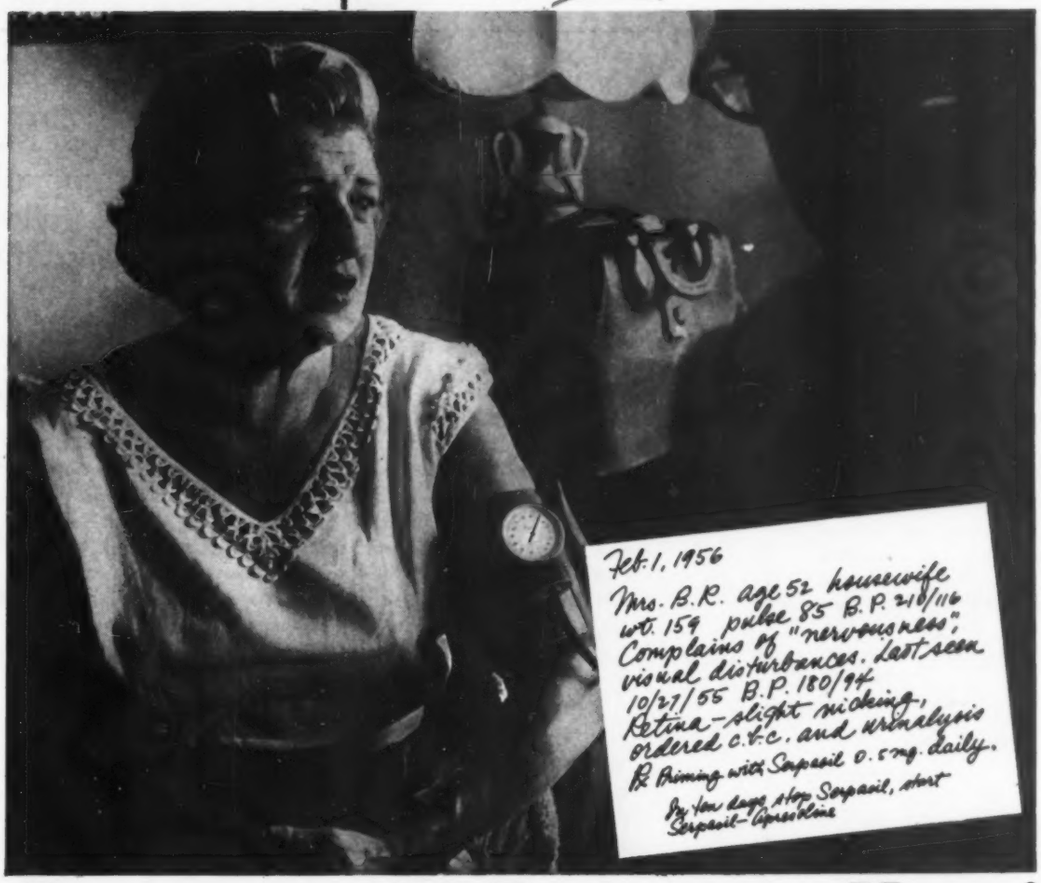
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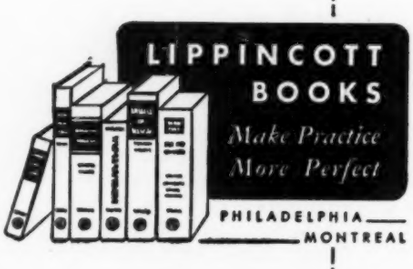

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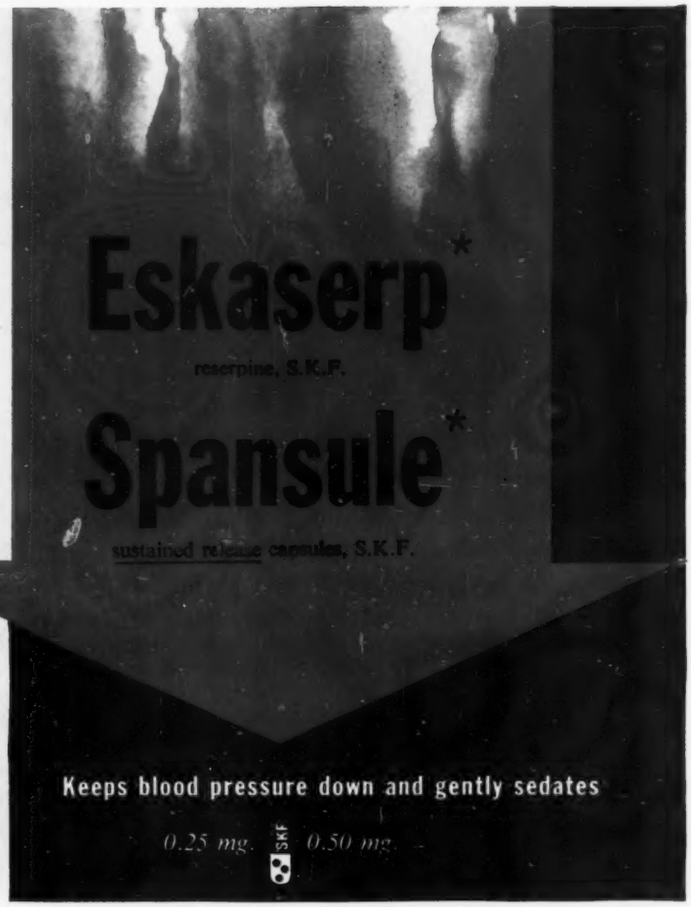

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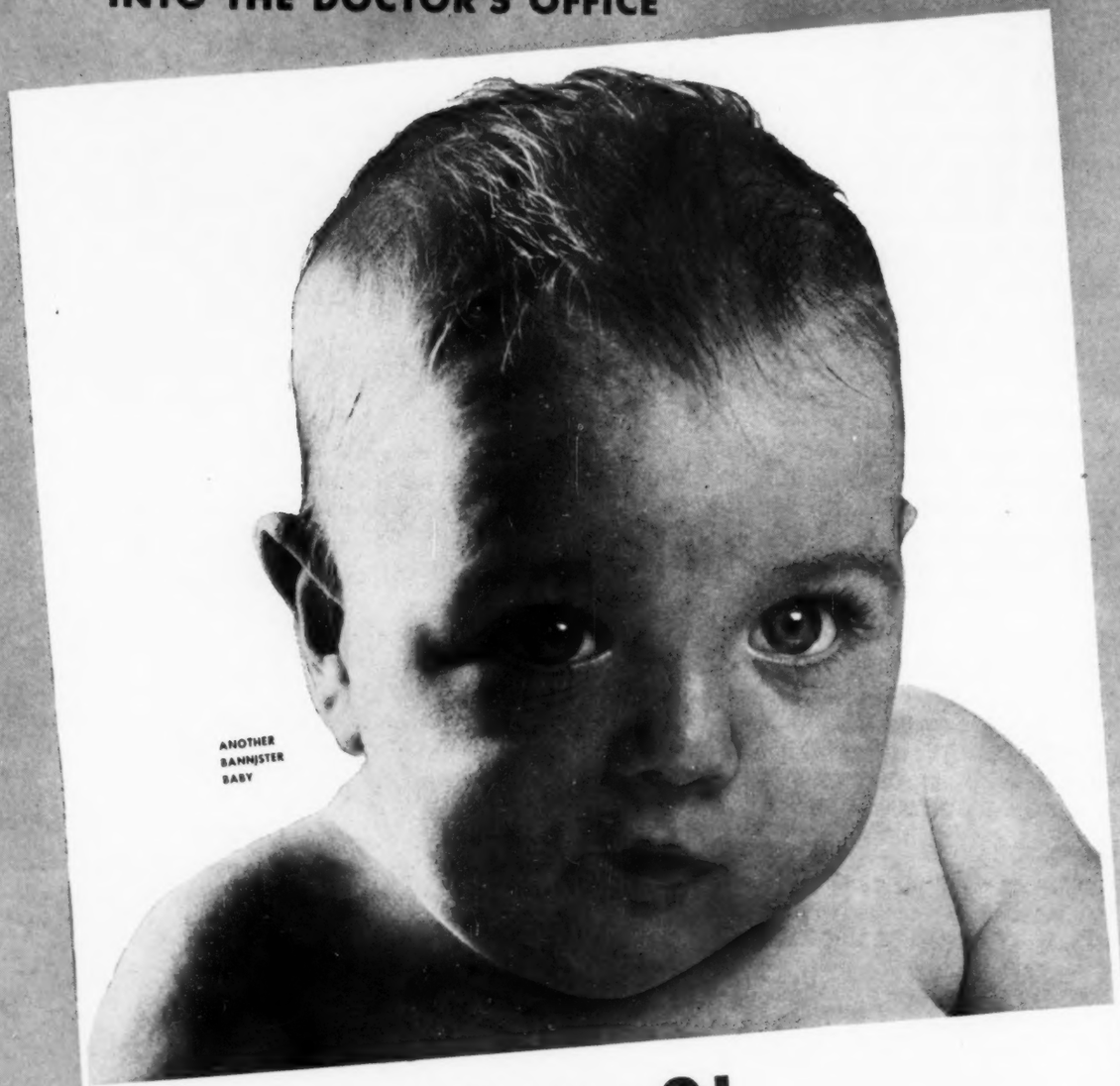

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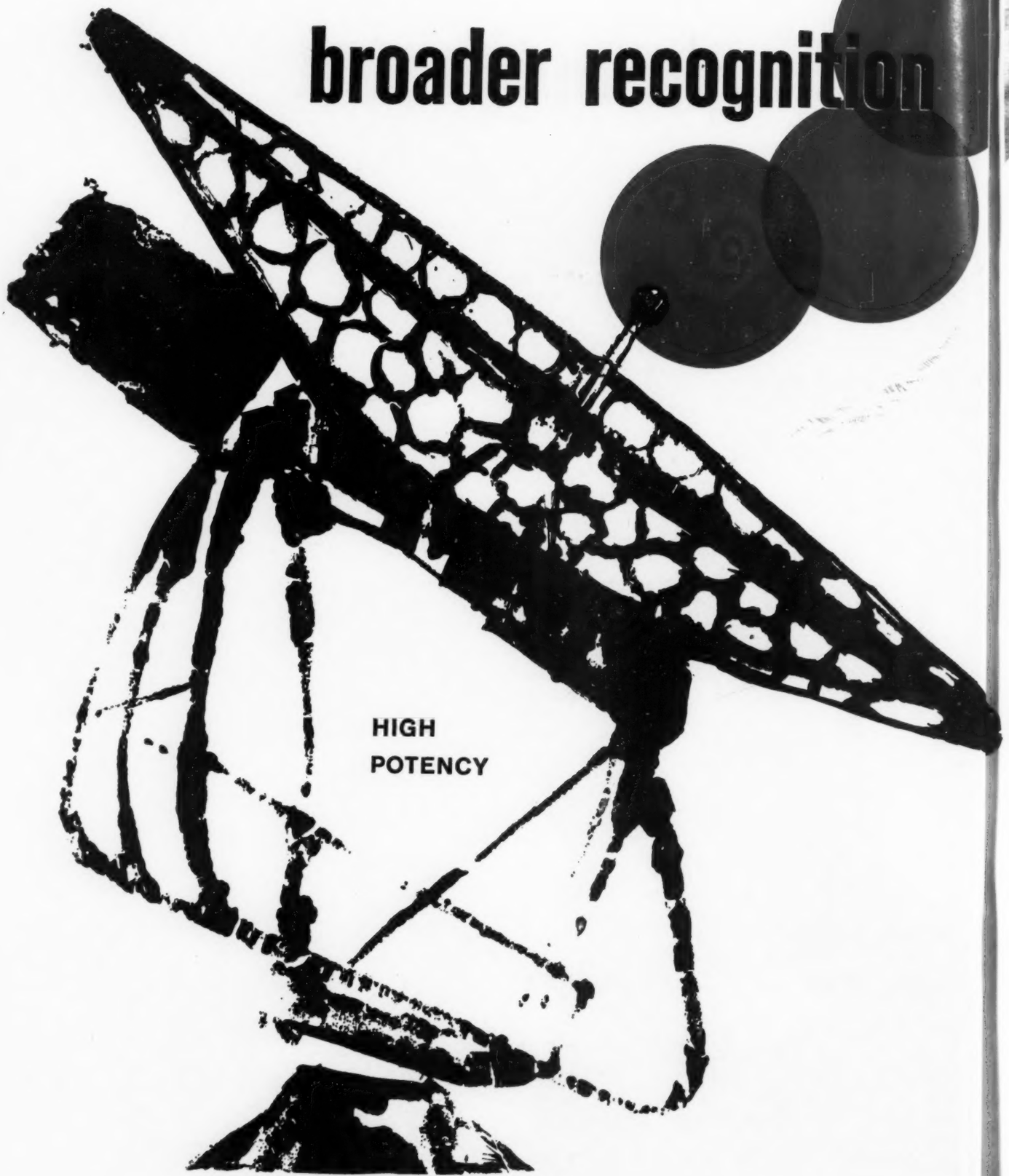


for Triple Sulfas!

It is no wonder that sulfa drugs are now gaining new recognition by physicians everywhere. Major advances in the sulfonamide field have resulted in new and safer therapy seldom complicated by toxic manifestations.

The Triple Sulfas in particular represent a perfection in sulfa therapy—therapeutic refinements include *smaller dosage, higher blood levels, excellent tissue diffusion, lower incidence of sensitization, ease of accurate chemical estimation in body fluids, reliable protection of the kidney, specificity for a wide group of common infections.*

A preparation of choice is the Triple Sulfa formulation combining equal parts of *sulfadiazine, sulfamerazine, and sulfamethazine.*[1,2] (U.S.P. XV Trisulfapyrimidines.)

Triple Sulfa preparations are available from leading manufacturers under their own brand names.

American Cyanamid Company, Fine Chemicals Division, 30 Rockefeller Plaza, New York 20, New York.

TRIPLE SULFAS

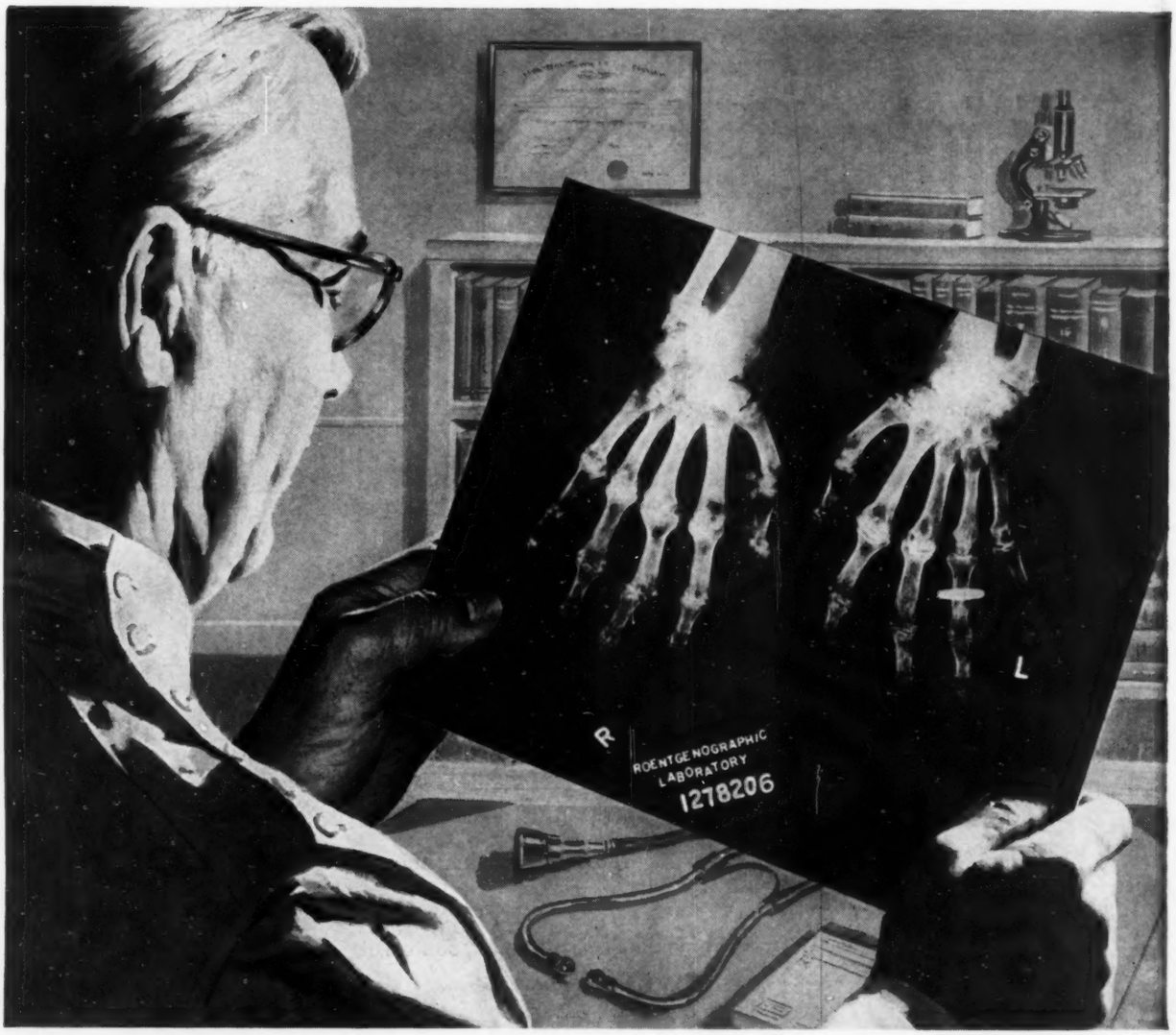
Meth-Dia-Mer Sulfonamides

SULFADIAZINE SULFAMERAZINE SULFAMETHAZINE

1. Goodman, L. S., and Gilman, A.: The Pharmacological Basis of Therapeutics, Ed. 2, 1955, The Macmillan Co., New York, pp. 1276-1320.

2. Krantz, J. C., and Carr, C. J.: The Pharmacologic Principles of Medical Practice, Ed. 3, 1954, The Williams & Wilkins Co., Baltimore, pp. 125-148.

CYANAMID



FLEXIBLE ARTHRITIS THERAPY with BUFFERIN®

Exploit fully the use of salicylates in arthritis—give steroids in minimal doses—combine salicylates with corticosteroids for additive antiarthritic effect—this is the program Spies[1] advocates in a recent article in the Journal of the American Medical Association.

Treatment of rheumatoid arthritis demands a "highly individualized program," Spies[1] writes. The additive action of salicylates permits use of smaller amounts of hormones, thus lessening or eliminating their well-known side effects. "A proper mixture of salicylates and corticosteroids produces an effective antirheumatic agent in many cases."[1]

Suit your treatment to your individual arthritic patient. Use the hormone you prefer, in the dosage you think best, but for better results combine it with BUFFERIN, a salicylate preparation proved to be well tolerated by arthritics.[2]

BUFFERIN contains no sodium, a marked advantage when cardiorenal complications make a salt-restricted diet necessary.

Each BUFFERIN tablet contains 5 grains of acetylsalicylic acid and the antacids magnesium carbonate and aluminum glycinate.

REFERENCES:
1. J.A.M.A. 159:645 (Oct. 15) 1955.
2. J.A.M.A. 158:386 (June 4) 1955.

BRISTOL-MYERS CO., 19 West 50 Street, New York 20, N. Y.

For controlling cough

ROMILAR IS AT LEAST AS EFFECTIVE AS CODEINE

Milligram for milligram,
Romilar is equal to codeine
in specific
antitussive effect

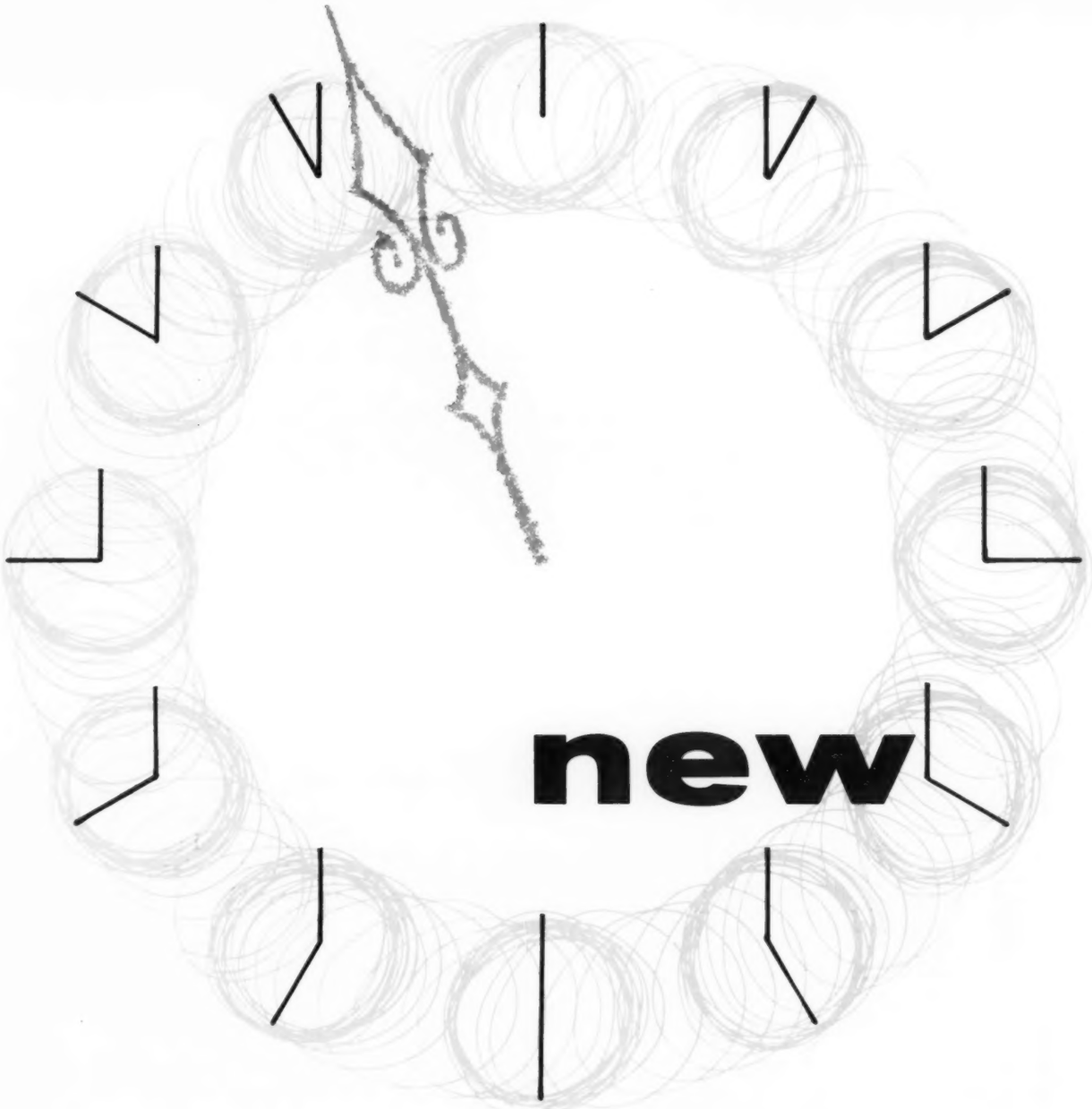
For avoiding unwanted side effects

ROMILAR IS CLEARLY BETTER THAN CODEINE

Non-narcotic,
non-addicting—
does not cause drowsiness,
nausea,
or constipation

ROCHE Hoffmann-La Roche Inc • Nutley • N. J.

Romilar® Hydrobromide—
brand of dextromethorphan hydrobromide.
Syrup, Tablets, Expectorant (w/NH_4Cl)



Only two doses a day for round-the-clock antibacterial therapy

In most cases, you can now provide antibacterial treatment around the clock with only two doses of Lipo Gantrisin daily. By producing adequate twelve-hour blood levels, Lipo Gantrisin 'Roche' simplifies the treatment of children and chronic invalids. This palatable liquid provides all the therapeutic advantages of Gantrisin on a b.i.d. schedule.

Lipo Gantrisin® Acetyl—brand of acetyl sulfisoxazole in vegetable oil emulsion

Report | from Carnation Research Laboratory

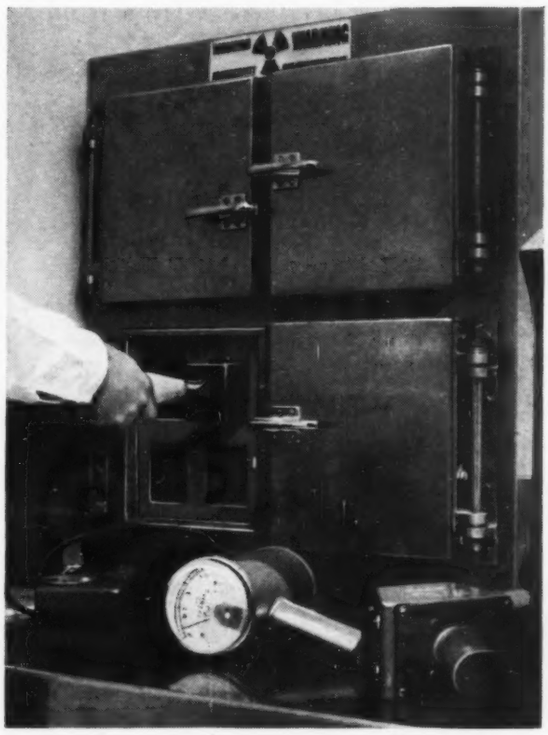
Van Nuys, California

5-Phase Research

For a half-century, Carnation has conducted a continuous and expanding 5-phase research program in dairy and cereal products.

1. CARNATION FARMS

More than fifty years of scientific cattle breeding at Carnation Farms have resulted in many famous Holstein champions. Cattle from these famous bloodlines are shipped to dairy farms across the country to help improve the Carnation milk supply.



5. SPONSORED UNIVERSITY RESEARCH

Carnation sponsors University research in highly specialized fields, such as radiation and supersonic vibration, as related to dairy foods. Current projects are under way at the California and Massachusetts Institutes of Technology and the Universities of Wisconsin and Illinois.

2. CARNATION RESEARCH LABORATORY

Newest research facility is the Carnation Research Laboratory at Van Nuys, California, shown above – one of America's most modern laboratories devoted to product research. In addition to direct research in dairy and cereal foods, Carnation Laboratory coordinates the other phases of Carnation Research.

3. QUALITY CONTROL RESEARCH

Laboratories at each Carnation Plant exercise rigid day-by-day control of Carnation Milk processing. Samples from *all* Carnation plants are rechecked at Central Product Control, Oconomowoc, Wisconsin, to assure *uniform* high quality of Carnation Milk everywhere.

4. SPONSORED ASSOCIATION RESEARCH

As a member of the National Research Council, Evaporated Milk Association, National Dairy Council, American Dry Milk Institute and many other similar organizations throughout the world, Carnation contributes importantly to the broad research activities conducted by these groups.

CARNATION PROTECTS YOUR RECOMMENDATION WITH CONTINUOUS 5-PHASE RESEARCH:

Carnation Farms,
Carnation Research Laboratory,
Carnation Plant Laboratories,
Carnation Central Product Control Laboratory,
Carnation-sponsored University and Association Research.

"from Contented Cows"

Erythromycin in the treatment of osteomyelitis*

8/3/55

CASE SUMMARY

On 6/2/55, patient, male, age 28, fell on an old fracture and refractured the middle third of the right femur, superimposed on an old osteomyelitis.

On 7/7/55, the wound was saucerized and a hemolytic S. aureus (coag. +) was isolated from the osteomyelitis. Disc sensitivities were: penicillin, 10 units; erythromycin, 10 mcg.; tetracycline, 10 mcg.

On 7/15, the patient was placed on erythromycin therapy 400 mgm. q. 6. h. Patient afebrile after erythromycin started. X-rays showed evidence of healing with callus formation. No septicemia and clinical evidence indicates control of the infection.

On 8/3, the cast was removed and leg recast. Wound was in good condition with minimal drainage.

Diagnosis: fracture middle third of right femur, complicated by osteomyelitis.

Result: erythromycin aided healing of the old osteomyelitis and kept the infection under control.

* *Communication to Abbott Laboratories*

specific against

coccic infections

Specific—because you can actually pinpoint the therapy for coccic infections. That's because most bacterial respiratory infections are caused by staph-, strep-and pneumococci. And these are the very organisms most sensitive to ERYTHROCIN—even when in many cases they resist other antibiotics.

filmtab®

Erythrocin®

(Erythromycin, Abbott)

STEARATE

with little risk of

serious side effects

Low toxicity—because ERYTHROCIN rarely alters intestinal flora. Thus, your patients seldom get gastroenteral side effects. Or loss of vitamin synthesis in the intestine. Virtually, no allergic reactions, either. *Filmtab* ERYTHROCIN Stearate (100 and 250 mg.), bottles of 25 and 100. Abbott

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Erythrocin®

(Erythromycin, Abbott)

STEARATE

® Filmtab—film-sealed tablets; pat. applied for

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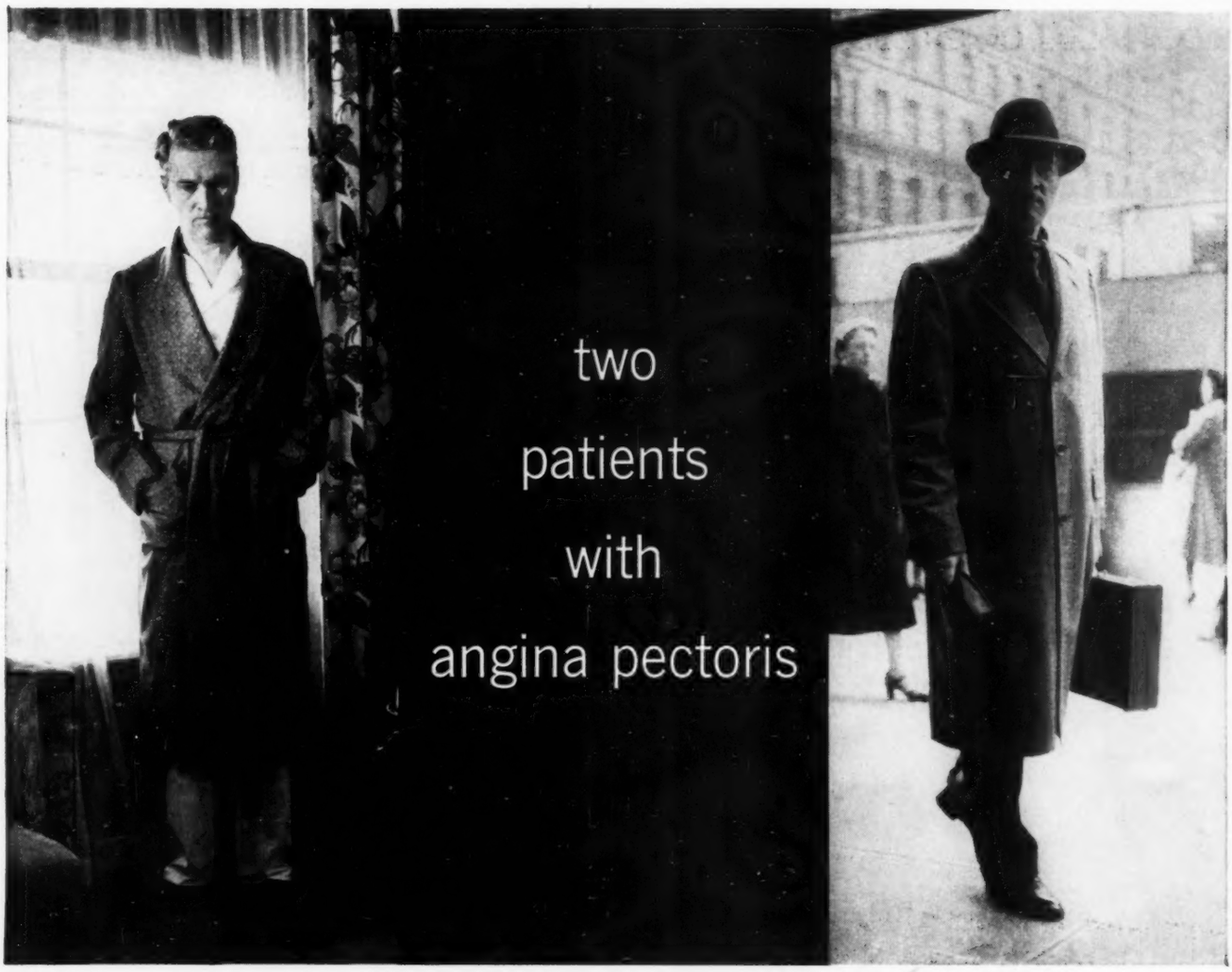


...your treatment can make *the difference*

In angina pectoris: ". . . the difference between complete, or almost complete, absence of symptoms, or a prolonged illness with much suffering" may lie in routine prophylaxis with Peritrate.[1]

New studies continue to confirm the effectiveness of this long-acting coronary vasodilator. "Impressive and sustained improvement" is observed in patients on Peritrate therapy.[2]

Simple prophylaxis: Peritrate is not indicated to abort the acute attack (nitroglycerin is still the drug of choice). However, you can reduce nitroglycerin dependence and provide continuing protection against attacks of angina pectoris with Peritrate. Prophylaxis is simple: 10 or 20 mg. of Peritrate *before meals* and at bedtime. Maintenance of a continuous daily dosage schedule is important for successful therapy.

Peritrate has been demonstrated to prevent or reduce the number of attacks, lessen nitroglycerin dependence, improve abnormal EKG findings and increase exercise tolerance.[3,4,5]

The specific needs of most patients and regimens are met with Peritrate's five dosage forms: Peritrate 10 mg. and 20 mg. tablets; Peritrate Delayed Action (10 mg.) for continuous protection through the night; Peritrate with Phenobarbital (10 mg. with phenobarbital 15 mg.) where sedation is also required; Peritrate with Aminophylline (10 mg. with aminophylline 100 mg.) in cardiac and circulatory insufficiency.

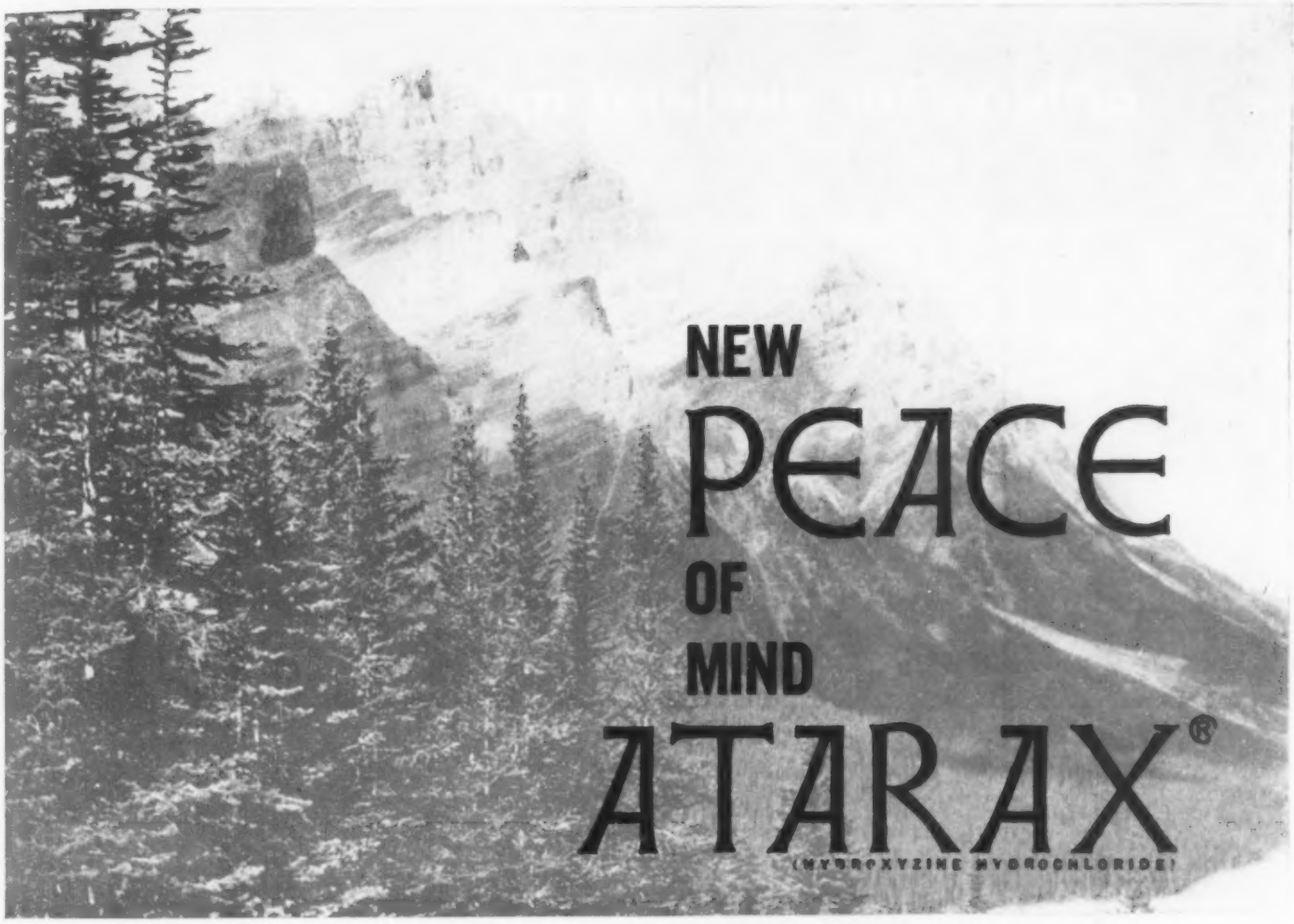
Usual Dosage: 10 to 20 mg. *before meals* and at bedtime.

References: **1.** Rosenberg, H. N., and Michelson, A. L.: Am. J. M. Sc. *230*:254 (Sept.) 1955. **2.** Kory, R. C., *et al.*: Am. Heart J. *50*:308 (Aug.) 1955. **3.** Winsor, T., and Humphreys, P.: Angiology *3*:1 (Feb.) 1953. **4.** Plotz, M.: New York State J. Med. *52*:2012 (Aug. 15) 1952. **5.** Dailheu-Geoffroy, P.: L'Ouest-Médical, vol. 3 (July) 1950.

Peritrate®

(brand of pentaerythritol tetranitrate)

WARNER-CHILCOTT



WITHOUT DISTURBING MENTAL ACUITY

FAST— begins to induce "peace of mind" within 15 minutes.[1]

EFFECTIVE— approximately 90% clinical response in anxiety and tension states.[1,2,3]

WELL-TOLERATED— virtually no side effects are reported. No toxic action on liver, blood or brain.[1,2,3]

DOSAGE: Adults, usually one 25 mg. tablet or two tsp. Syrup, t.i.d. Children, usually one 10 mg. tablet or one tsp. Syrup, once or twice daily. Adjust as needed.

SUPPLIED: In tiny 25 mg. (green) tablets, and 10 mg. (orange) tablets, bottles of 100. ATARAX Syrup in pint bottles, containing 2 mg. ATARAX per cc.

NOW IN CORDIAL-LIKE FORM, TOO. PROMPT-ACTING, GOOD-TASTING

ATARAX SYRUP

Rx ROERIG

Chicago 11, Illinois

References: 1. Farah, Luis: Int. Rec. of Med. & Gen. Prac. Clin. **169**:379 (June) 1956. 2. Shalowitz, M.: Geriatrics, July, 1956. 3. Robinson, H. M. et al: J.A.M.A. **161**:604 (June 16) 1956.

criteria for skeletal muscle relaxant

"The need for a therapeutic agent that would provide prolonged relaxation of spastic or rigid muscles is generally recognized. To date, there has been no available drug proved sufficiently safe, effective, or long-lasting to justify its general use."[1]

Before Flexin

NOW

flexin*

(Zoxazolamine,† McNeil)

fulfills these

supplied: 250 mg. yellow, scored tablets, bottles of 50.

(1) Abrahamsen, E. H., and Baird, H. W., III: J.A.M.A. *160*:749 (Mar. 3) 1956.
(2) Amols, W.: J.A.M.A. *160*:742 (Mar. 3) 1956.
(3) Rodriguez-Gomez, M.; Valdes-Rodriguez, A., and Drew, A. L.: J.A.M.A. *160*:752 (Mar. 3) 1956.
(4) Smith, R. T.; Kron, K. M.; Peak, W. P., and Hermann, I. F.: J.A.M.A. *160*:745 (Mar. 3) 1956.

*T.M. †U. S. Patent Pending

FLEXIN is sufficiently safe

"No significant alterations of pulse, blood pressure, or respiration were observed [during therapy with FLEXIN], and there were no deleterious effects noted in blood counts, urinalyses, or liver and kidney function tests."[2]

"...no important signs of toxicity were found in blood or urine studies...drowsiness and transient dizziness in an occasional patient, together with occasional mild gastric irritation, were the only undesirable side-effects observed..."[3]

FLEXIN is effective

"When it [FLEXIN] was administered orally in doses of 250 to 500 mg. three and four times a day, 14 of 18 patients with spasticity due to spinal cord lesions showed objective improvement of spasticity."[3]

"Rheumatic diseases with the major disability caused by stiffness and aching appear to respond well..."[4]

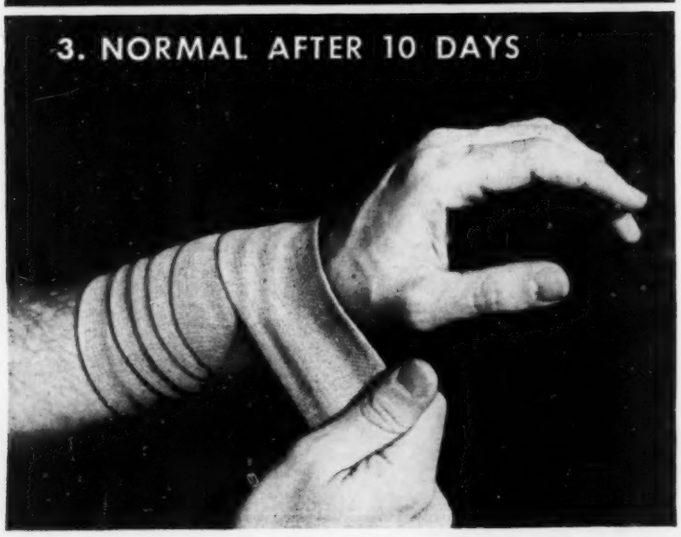
FLEXIN has a long duration of action

"The administration of an effective dose of zoxazolamine [FLEXIN] was usually followed by muscular relaxation within an hour, with the peak effect being reached within two hours and waning within four hours. Some degree of muscular relaxation was occasionally seen 24 hours or longer after discontinuance of therapy."[1]

requirements

McNEIL LABORATORIES, INC • PHILADELPHIA 32, PA. McNEIL

TENSOR... the automatic elastic bandage ADJUSTS ITSELF TO THE SWELLING



1.
The pressure *you* apply, Doctor, is the pressure TENSOR maintains.
It gives proper support at every stage of the swelling because . . .

2.
. . . TENSOR adjusts *itself* to the swelling. Never a danger of constriction. When the swelling goes up, so does TENSOR; when it goes down, TENSOR returns to its original length. That's because TENSOR is woven with heat-resistant, live rubber threads for long life and positive stretch . . .

3.
. . . And after the swelling is gone, and only firm support is needed, your patients can apply TENSOR themselves—*safely*. New, exclusive plastic ends insure the elimination of dangerous, bulky pressure points.

Why not give your patients the advantages of TENSOR?

NEW TENSOR®
ELASTIC BANDAGE
WOVEN WITH HEAT-RESISTANT LIVE RUBBER THREADS

BAUER & BLACK

Division of The Kendall Company
309 W. Jackson Blvd., Chicago 6, Ill.

Action and Coaction

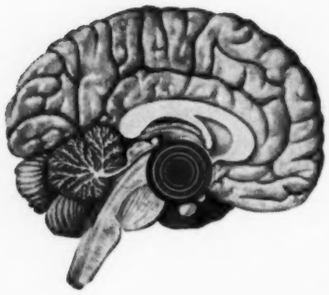
in peptic-ulcer management

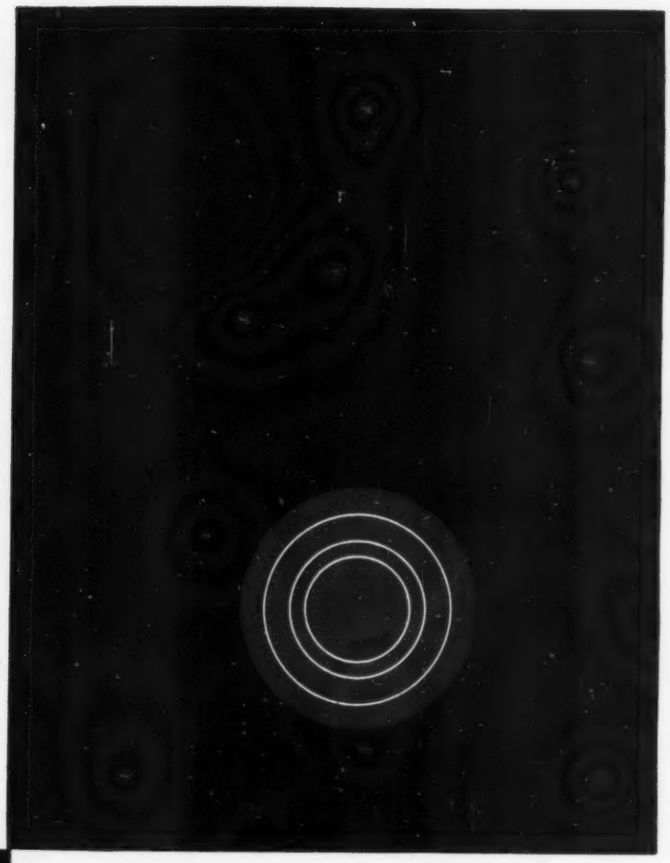
- To combat corrosive acidity by prompt buffering
- To relieve acid distress and pain
- To promote healing by prolonged protective action
- To avoid systemic disturbance—no autonomic side-effects, no alkalosis, no acid rebound, no renal burden

Wyeth®
Philadelphia 1, Pa.

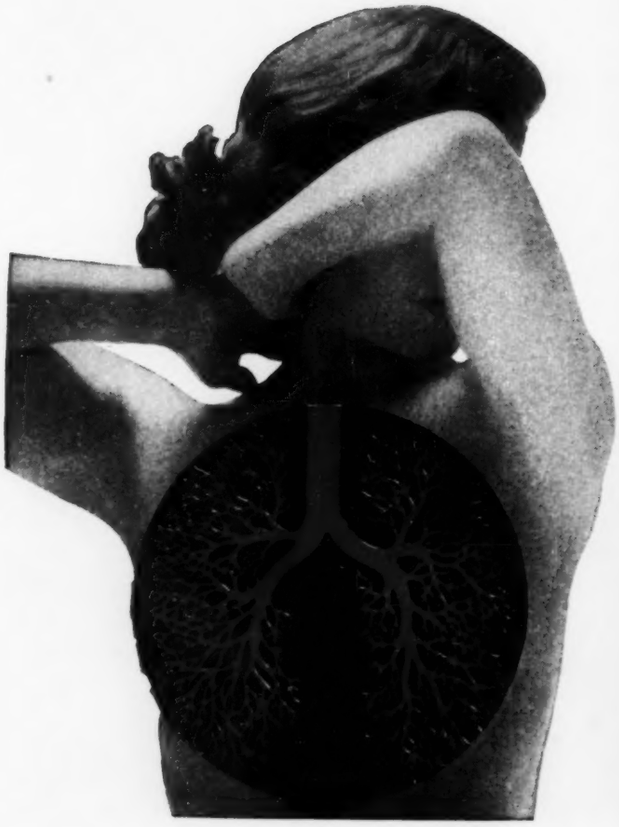
Amphojel®
ALUMINUM HYDROXIDE GEL

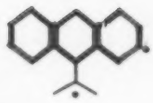
double gel
for biphasic action





in severe asthma . . .





in severe asthma . . .

Relief of psychic stress is often as important as control of offending allergens in the successful treatment of many patients with severe asthma.

THORAZINE* can be highly effective...

'Thorazine' has a definite place in the treatment of severe asthma. The unique ataraxic, tranquilizing effect of 'Thorazine' controls the emotional processes which may either cause or aggravate and prolong the severe asthmatic attack. Furthermore, 'Thorazine'—unlike calming agents previously used—causes little or no respiratory depression.

It goes without saying that not all cases of asthma are suitable for 'Thorazine' therapy. 'Thorazine' is most useful when the psychic element is important.

'Thorazine' should be used discriminately and, before prescribing, the physician should be fully conversant with the available literature.

'Thorazine' is available in ampuls, tablets and syrup (as the hydrochloride), and in suppositories (as the base).

Smith, Kline & French Laboratories, Philadelphia 1

*T.M. Reg. U.S. Pat. Off. for chlorpromazine, S.K.F.

When better automobiles are built Buick will build them

Here is Newness for the Sake of Greatness—

Newest Buick Yet

To the automobile industry's great tradition of introducing annual new car models, Buick has contributed more than its share over the years.

But the 1957 Buicks go beyond that — to a newness vastly more than tradition alone demands.

For these are cars totally new in the literal sense — and wholly different in control and obedience from anything you have ever known before.

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In new bumpers, new hoods, new roof lines, new safety-padded instrument panels, new controls, new safety steering wheels, new color-mating of interiors with exteriors.

They are new in ways you can feel.

In the action of an advanced new Variable Pitch Dynaflow* — *instant* Dynaflow — so responsive, so full-torque, so smoothly flexible in "Drive" that the need for "Low" has been practically eliminated.

In the answer of brilliant new V8 engines—snugged lower in the hip-high hoods of these sleek cars, yet sized to a 364-cubic-inch displacement for an all-time high in horsepower and compression.

In the spectacular surety of a new ride, a new handling, a new braking, a new steering.

And each of these spanking-bright '57 Buicks — ROADMASTER, SUPER, CENTURY, SPECIAL, and a new Caballero — is new in other things to delight you, thrill you, sparkle your eyes.

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**New Advanced Variable Pitch Dynaflow is the only Dynaflow Buick builds today. It is standard on Roadmaster, Super and Century—optional at modest extra cost on the Special.*

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WRITES ABOUT
ST. JOSEPH ASPIRIN FOR CHILDREN:

"We recommend it to all Mothers for their Children"

The first
and
last instruction
mothers see
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St. Joseph
Aspirin For Children

Physicians are finding St. Joseph Aspirin For Children:

1 *Easy to give*
2 *Pleasant to take*
3 *Therapeutically Effective*

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A Palatable Aspirin Tablet of Unique Excellence

A PRODUCT OF
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MEMPHIS, TENN.

If you have not received samples, write to Plough, Inc., Memphis, Tennessee

Fura

'52

"Bacteria can develop only a limited resistance to the nitrofurans in vitro."[1]

'53

"At the end of the experiment, the sensitivity of these bacteria to this drug [FURADANTIN] was determined and found to be the same as before the experiment."[2]

'54

"Microorganisms, in vitro, did not appear to develop resistance to FURADANTIN."[3]

'55

"It is noteworthy that this drug [FURADANTIN] shows no tendency to permit development of resistant bacterial strains in vitro."[4]

'56

"FURADANTIN is a chemical agent of the nitrofuran group. . . . Most important is the fact that they show little tendency to permit the development of bacterial resistance."[5]

dantin®

BRAND OF NITROFURANTOIN

5 years of extensive use in genitourinary tract infections demonstrate negligible development of bacterial resistance

In addition to the significant lack of development of resistant bacterial mutants attending therapy with FURADANTIN, unexcelled effectiveness and a wide margin of safety combine to make it an agent of choice in the treatment of pyelonephritis, cystitis and prostatitis.

FURADANTIN . . . "may be unique as a wide-spectrum antimicrobial agent that is bactericidal, relatively nontoxic, and does not invoke resistant mutants."[6]

effective

- rapid antibacterial action against a wide range of gram-positive and gram-negative bacteria and organisms resistant to other agents including Proteus, and certain strains of Pseudomonas
- negligible development of bacterial resistance
- no cross-resistance to other antibacterials since FURADANTIN is unrelated chemically to antibiotics or sulfonamides
- effective in the presence of blood, pus and urine

excellent tolerance

- no reports of injury to kidneys, liver or blood-forming organs
- no cases of blood dyscrasia, monilial superinfection, crystalluria or staphylococcic enteritis ever reported
- no cross-sensitization to other drugs
- side effects, such as headache, dizziness, diarrhea and pruritus ani, are rarely associated with FURADANTIN therapy

FURADANTIN DOSAGE: Average adult dose is four 100 mg. tablets daily; 1 tablet during each meal and 1 on retiring, with food or milk. Average dosage range for children is 5 to 7 mg. per Kg. per 24 hours.

SUPPLIED: Tablets, 50 and 100 mg., bottles of 25 and 100.
Oral Suspension (5 mg. per cc.), bottle of 118 cc.

FURADANTIN *Sensi-Discs for bacterial sensitivity tests are available from Baltimore Biological Laboratories.*

REFERENCES: 1. Paul, H. E., et al.: Proc. Soc. Exp. Biol., N. Y. 79:199, 1952. 2. Mintzer, S., et al.: Antibiotics 3:151, 1953. 3. Abrams, M., and Prophete, B.: Missouri M. 51:280, 1954. 4. Dodson, A. I., and Hill, J. E.: Virginia M. Month. 82:385, 1955. 5. Lowsley, O. S., and Kerwin, T. J.: Clinical Urology, Baltimore, Williams & Wilkins Company, 1956, ed. 3, pp. 981-982. 6. Waisbren, B. A., and Crowley, W.: A.M.A. Arch. Int. M. 95:653, 1955.

FURADANTIN—
one of the nitrofurans—
a new class of
antimicrobials—
neither antibiotics
nor sulfonamides

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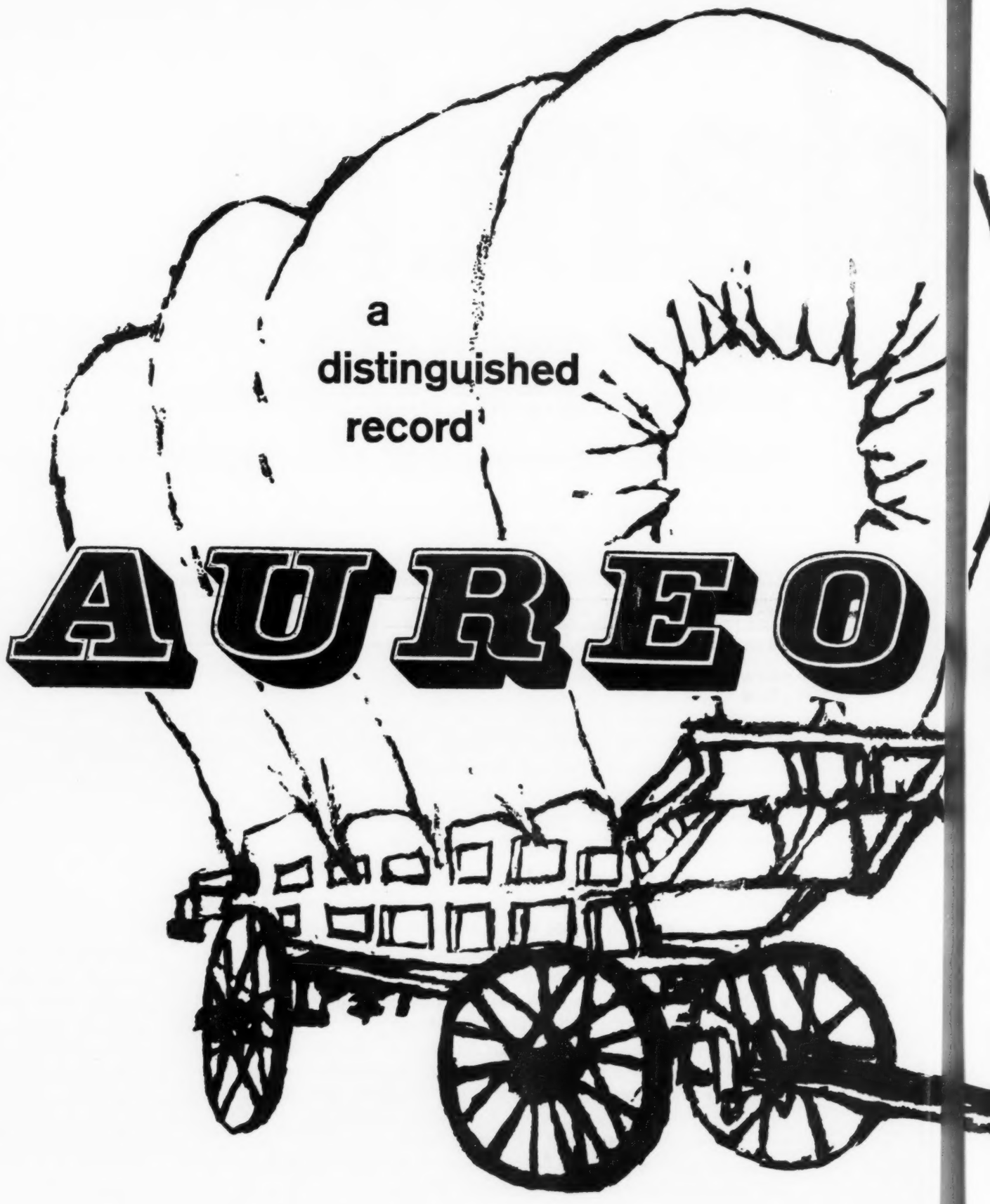
a
distinguished
record
AUREO

The *pioneer among tetracyclines*, AUREOMYCIN remains unsurpassed in anti-infective range, variety of application, effectiveness at low dosage.

MYCIN*

Hydrochloride
Chlortetracycline HCl *Lederle*

Since its availability, more than a *billion* individual doses of AUREOMYCIN have been administered to patients throughout the world. Few therapeutic agents have been found as consistently effective against a wide group of diseases.

A convenient dosage form for every medical requirement.

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*REG. U. S. PAT. OFF.

"Active iron"...

an important characteristic of the four Heinz Baby Cereals

HEINZ Barley – barley flour, yeast, tricalcium phosphate, salt, iron, niacin, thiamine.

HEINZ Oatmeal—oat flour, dicalcium phosphate, salt, calcium carbonate, iron, niacin, thiamine.

HEINZ Rice – rice, vegetable shortening, yeast, tricalcium phosphate, salt, iron, niacin, thiamine.

HEINZ Mixed Cereal Food —oat, wheat and corn flour, yeast, tricalcium phosphate, salt, iron, niacin, thiamine.

- **All four** Heinz Baby Cereals are fortified with added nutrients to increase their value to the infant's diet. One of the most important of these is reduced, or ferrous iron.

- **Heinz calls this** "active iron" and it's a development of Heinz Research.

- **"Active iron"** is completely absorbable. Two tablespoons of any of these cereals give an infant 50% of his daily requirement.

- **Other nutritive fortification includes:** Dried yeast, di-calcium and tricalcium phosphates, calcium carbonate, and niacin and thiamine hydrochloride in synthetic form.

- **Heinz Pre-Cooked Baby Cereals** are backed by an 87-year-old reputation for high quality. You can recommend them with complete confidence.

Heinz Baby Foods

THEIR PREPARATION IS OUR MOST IMPORTANT TRUST

57

Over 70 Better-Tasting Kinds

H. J. HEINZ COMPANY
Pittsburgh, Pennsylvania

For maximum physiologic uptake of vitamin A

Acon®

(Aqueous Vitamin A)

For rapid absorption of vitamin A

ACON, water-dispersible Vitamin A in small particle size, provides optimal absorption and utilization of Vitamin A. Indicated in hypovitaminosis A and in selected cases of acne, hyperkeratoses, and dry scaly skin.

Supplied:

ACON Drops, vitamin A palmitate (synthetic): 25,000 U.S.P. units per cc., in 30-cc. dropper bottles.

ACON Capsules: 25,000 and 50,000 U.S.P. units in bottles of 100 each.

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OFFICE CALLS OR

The new *Tycos*®

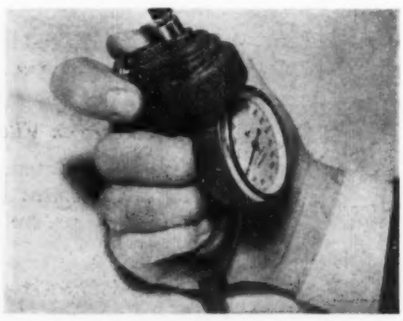
ACCURACY plus convenience—that's what the TYCOS Hand Model Aneroid has meant to doctors for 49 long years. Today's TYCOS Aneroid continues to mean unsurpassed accuracy—and it's even handier than before!

Practicing physicians field-tested the new TYCOS Hand Model Aneroid for months before we released it. They told us: "The more we use it, the better we like it."

There's been the same reaction since the new

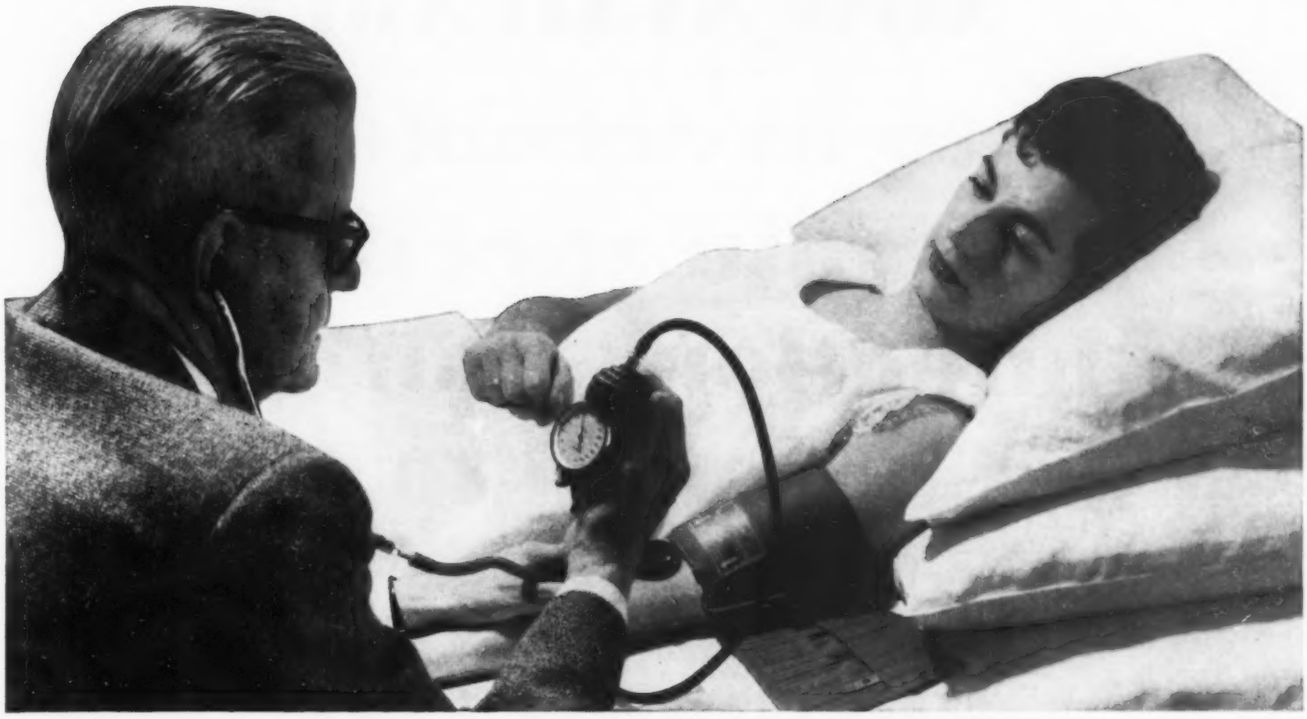
1. Hold this new instrument. We've built the inflating bulb and air release valve right into the back of the gage—the whole instrument fits comfortably into the palm of either hand.

2. Connect the gage to the hook cuff with a gentle twist—the Luer lock makes it airtight. You'll like being able to hook the cuff on the arm before connecting the gage.



3. Inflate the new TYCOS Hand Model Aneroid with edge of gage resting against base of your thumb. Thumb and index finger naturally grasp big thumb screw release valve.

Taylor Instruments **MEAN ACCURACY FIRST**



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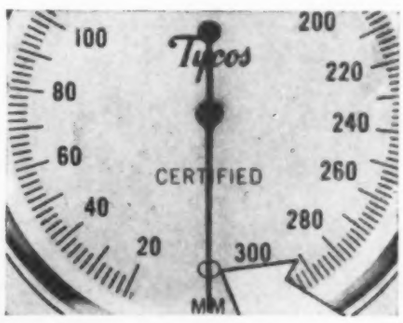
Hand Model Aneroid

instrument was placed on the market. The picture panels below show how simply and easily it works. Try it out—you'll like it, too.
Protected by the famous TYCOS 10-year triple warranty. Complete with genuine leather zipper case, hook cuff. Weighs 18 ounces. At your favorite surgical supply house. **Price $47.50.** Completely made and serviced in U. S. A. by skilled instrument technicians. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

4. **Try** it out with the cuff rolled up —this simulates actual use. See how you can shield the dial from peering patients—and how nicely it balances in your hand.

5. **Release** air pressure 2 mms. at a time, or deflate completely with ½ turn of the thumb screw. Remove thumb screw to see how floating stainless steel ball replaces old needle valve.



6. **Check** this safeguard — the new TYCOS Hand Model Aneroid is always accurate as long as pointer returns within oval zero. Accurate in any position. Hold it where easiest to read.

Taylor Instruments **MEAN ACCURACY FIRST**

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to overcome certain specific infections that do not respond to any other antibiotic[1, 2, 3]....

New...

TODAY'S resistant pathogens are the tough survivors of a dozen widely used antibiotics. Certain organisms, notably *Staphylococcus aureus*[4] and susceptible strains of *Proteus vulgaris*, produce infections which have been resistant to *all* clinically useful antibiotics.

To augment your armamentarium against these resistant infections, 'CATHOMYCIN' (Novobiocin, Merck), derived from an organism recently discovered and isolated in the Merck Sharp & Dohme Research Laboratories[1], is now available.

SPECTRUM—'CATHOMYCIN'[1, 2, 3, 5, 6] has also been shown to be active *in vitro* against other organisms including—*D. pneumoniae*, *N. intracellularis*, *S. pyogenes*, *S. viridans* and *H. pertussis*, but clinical evidence must be further evaluated before 'CATHOMYCIN' can be recommended for these pathogens.

ACTION—'CATHOMYCIN' in optimum concentration is bactericidal. Cross-resistance with other antibiotics has not been observed.[7]

TOLERANCE—'CATHOMYCIN' is generally well tolerated by most patients.[5, 6, 8, 9, 10, 11]

ABSORPTION—'CATHOMYCIN' is readily absorbed[5, 6, 9] and oral dosage produces significant blood and tissue levels which persist for at least 12 hours.[7]

'CATHOMYCIN'

(Crystalline Sodium Novobiocin, Merck)

SODIUM

INDICATIONS: Clinically 'CATHOMYCIN' has proved effective for cellulitis, carbuncles, skin abscesses, wounds, felons, paronychiae, varicose ulcer, pyogenic dermatoses, septicemia, bacteremia, pneumonia and enteritis due to *Staphylococcus* and infections caused by susceptible strains of *Proteus vulgaris* resistant to other antibiotics.[6, 7, 8, 9, 10, 11, 12, 13, 14]

Also, it is of particular value as an adjunct in surgery since staphylococcic infections seem prone to complicate post-operative courses.

SUPPLIED: 'CATHOMYCIN' Sodium (Crystalline Sodium Novobiocin, Merck) in capsules of 250 mg., bottles of 16.

'CATHOMYCIN' *is a trademark of Merck & Co., Inc.*

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March of Medicine

presents

MONGANGA

the story of missionary medicine
with commentary by John Gunther

TUESDAY, NOVEMBER 27, 9:30 P.M., EST

NBC-TV NETWORK IN COLOR

produced and sponsored by
Smith, Kline & French Laboratories
in cooperation with
American Medical Association

Departing from its usual half-hour format, "The March of Medicine" medical television series will present a full hour telecast on missionary medicine entitled, "Monganga." Filmed in the Belgian Congo, the program will be presented over 96 stations of the NBC-TV network, on Tuesday, November 27, at 9:30 p.m., EST.

"Monganga" (*white doctor* in the Lingala dialect) is the story of Dr. John E. Ross who, for six years, has served at a mission station in the Congo village of Lotumbe. Leprosy, yaws, elephantiasis, sleeping sickness, and arthritis are a time-consuming challenge to Dr. Ross. Yet he finds time to journey by land and water to distant bush clinics, build new quarters for patients and their families, train a native staff of assistants and supervise the nearby leprosarium.

Armstrong Cork Company has kindly relinquished the time of its "Armstrong Circle Theater" to Smith, Kline & French Laboratories for this "March of Medicine" presentation.

drawing of wood carving courtesy of the Brooklyn Museum

Now you can add her stylish fancy to your prescription facts.

Soft plastic purse.
3 oz. tube of Lanteen jelly.
New Easy-clean jelly applicator.
Lanteen flat spring diaphragm of prescribed size.
Universal inserter.

The new Lanteen Exquiset reflects the best of milady's taste—it's both stylish and discreet. Your patient will appreciate your prescription for the Lanteen Exquiset. You will have prescribed an effective contraceptive technique, and also taken account of her feminine fancy. Another design by Lanteen for better patient-cooperation.

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PRELUDIN

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...chemically different...clinically distinctive anorexiant

A totally new development in anorexigenic therapy, PRELUDIN substantially reduces the discomfort in reducing.

Distinctive in its Chemistry: PRELUDIN is a totally new compound of the oxazine series.

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For your patient's greater comfort: PRELUDIN curtails appetite without destroying enjoyment of meals...causes a mild elevation of mood that keeps the patient in an optimistic and cooperative frame of mind.

Recommended Dosage: One tablet two or three times daily taken one hour before meals. Occasionally smaller dosage suffices.

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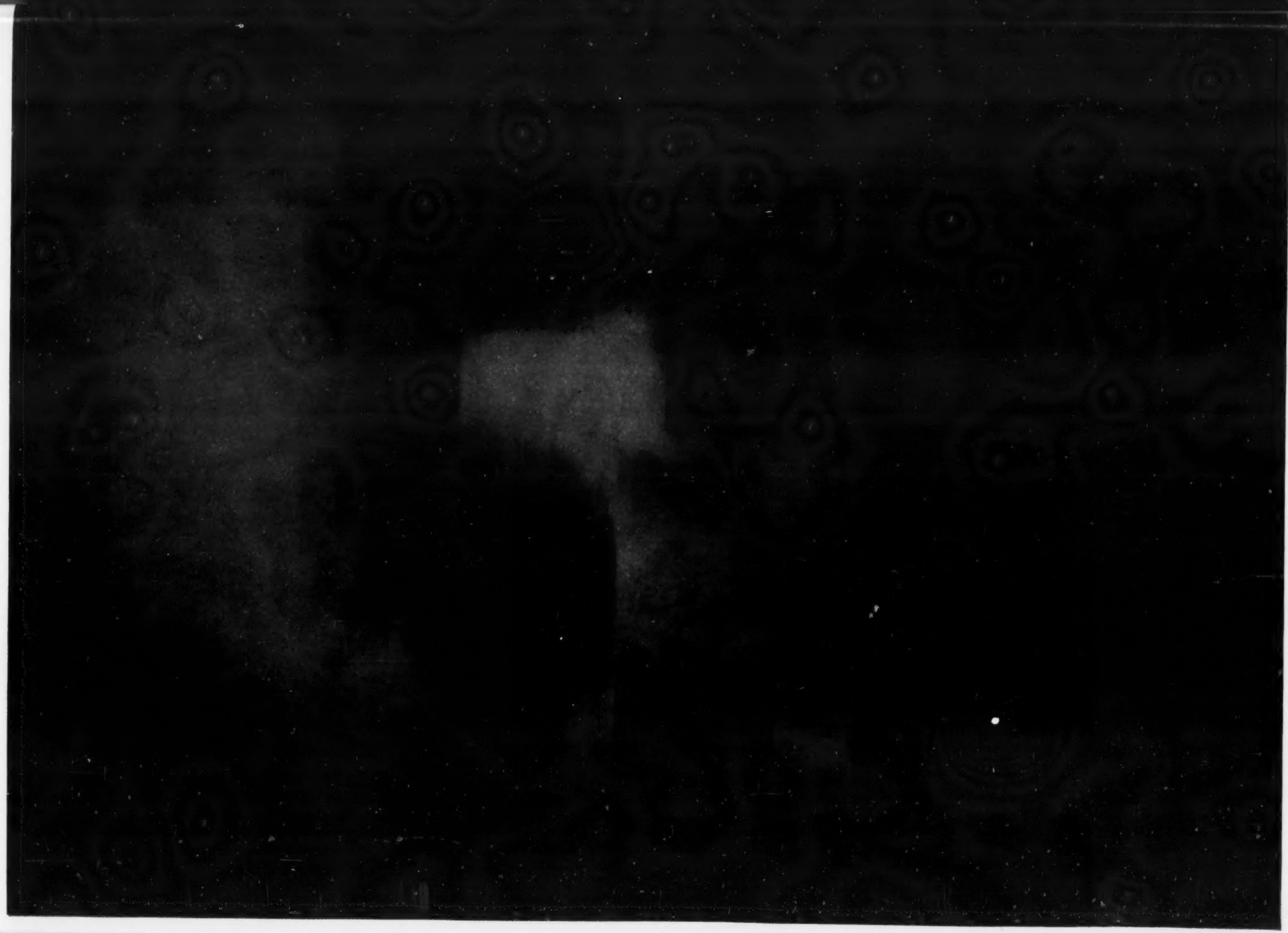

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Intravenous anesthesia with SURITAL is reassuring to surgeon as well as to anesthesiologist. For the surgeon, SURITAL means few interruptions due to laryngospasm, to bronchospasm, or to respiratory or circulatory depression. Easily maintained surgical plane of anesthesia and few postoperative complications experienced with SURITAL mean minimal worry. And because it provides rapid, pleasant induction and recovery, SURITAL spares patients unnecessary distress.

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basic for your hypertensives

. . . and a tranquillizer, too

Rautensin lowers the blood pressure—smoothly—safely. It is a *complex* of Rauwolfia serpentina alkaloids* and is basic therapy in all grades of hypertension. The smooth, persistent lowering of blood pressure it provides, controls most cases of early labile, particularly neurogenic, hypertension. In severe cases it augments the action of other drugs.

Rautensin for a tranquillizing effect

The "just-right" combination of sedative alkaloids contained in Rautensin provides tranquillity and stability to the overwrought patient. This is manifested by a new feeling of relaxation and a philosophical attitude toward environmental stresses and strains. Patients on Rautensin achieve a marked reduction of anxiety together with an increased intellectual and psychomotor efficiency. Unlike the action of barbiturates the tranquillizing properties of Rautensin do not exact the penalties of lethargy, hangover and loss of mental acuity.

Rautensin causes no tension rebound

Unlike other ataractic drugs, the tranquillizing action of Rautensin may persist for several weeks after medication is stopped. The patient is gently eased back into the tempo of life – taking reduced booster doses only when needed.

*Rautensin is the *alseroxylon fraction* of Rauwolfia serpentina that contains reciprocally potentiating hypotensive and tranquillizing alkaloids – free of the inert elements and the yohimbine-like alkaloids of the whole root.

Indications: Neurovascular tension states leading to essential labile hypertension, tachycardia, vertigo, palpitations, insomnia, tension headache and certain neurodermatological and gastrointestinal disorders.

Formula: Each tablet contains 2 mg. of purified Rauwolfia serpentina alkaloids (alseroxylon fraction).

Dosage: For the first 20 to 30 days, 2 tablets once daily, preferably on retiring; thereafter, the maintenance dose of 1 tablet daily suffices for most patients.

RAUTENSIN® for the hypertensive and the hypertense

SMITH-DORSEY • Lincoln, Nebraska • a division of The Wander Company

in patients with colds . . . sinusitis . . . rhinitis

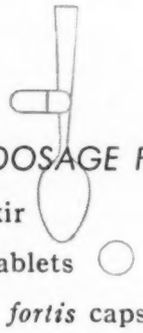
unplug *that* *stuffed-up nose*

orally *with*

Novahistine®

The distinct additive action of a vasoconstrictor with an antihistaminic drug provides marked nasal decongestion and promotes normal sinus drainage. Oral dosage avoids possible harmful misuse of topical agents ...eliminates nose drop rebound. Novahistine is not likely to cause jitters or cerebral stimulation.

Each Novahistine Tablet or teaspoonful of Elixir, provides 5.0 mg. of phenylephrine HCl and 12.5 mg. prophenpyridamine maleate. Novahistine *Fortis* Capsules contain twice the amount of phenylephrine for those who need greater vasoconstriction.



3 DOSAGE FORMS
elixir
tablets
fortis capsules

PITMAN-MOORE COMPANY *Division of Allied Laboratories, Inc.,* **Indianapolis 6, Indiana**

Headache, Insomnia, Fatigue May Be Symptoms of Ovarian Decline

Symptomatology is related to metabolic role of estrogen

Over 62 per cent of menopausal patients complain of headaches, 72 per cent of insomnia, 88 per cent of lassitude and fatigability.[1] These symptoms may be due to ovarian decline. Frequently they occur before or after the actual menopause and are not accompanied by the classic hot flushes or other manifestations of the syndrome. Estrogen replacement with the orally active natural estrogen-complex provides prompt relief and a gratifying "sense of well-being."

Female patients past 40 seeking relief from headache, insomnia, and easy fatigability account for a great number of office calls in everyday practice. When symptoms of this type persist, the physician will have cause to suspect a frequent source of many seemingly untraceable and deceptive symptoms: estrogen deprivation due to ovarian decline, the cause of menopausal distress and of the pre- and postmenopausal syndrome.

Headaches may be of various types and location. Vertex and occipitocervical headache has almost specific diagnostic importance in hypo-ovarianism.[2] Many patients complain of sleeping poorly; they are restless and remain awake for varying lengths of time. Another frequent complaint is easy fatigability even after mild exercise. Sometimes this symptom is accompanied by palpitations, tachycardia, and dyspnea. Greene[3] states that ". . . some 80 per cent of women experience symptoms which are at best annoying and at worst incapacitating."

The wide range of signs and symptoms associated with declining ovarian function often suggests a variety of organic, metabolic, or psychogenic disturbances. Such manifestations may occur without the classic menopausal symptoms, for the influence of the ovarian hormone is not restricted to sex-linked tissues but affects the metabolism and function of practically all tissues and organs of the body.

As a woman approaches the termination of her childbearing years, her ovaries become less responsive to stimulation by the pituitary gland; a relative hyperfunction of the pituitary then becomes evident and, through influence on other glands, may cause a disharmony of hormonal balance[1,2] and thus lead to a variety of metabolic disorders.

Instead of relying on analgesics and sedatives with the risk of habituation and other untoward effects, therapy directed at the underlying cause is indicated. When ovarian decline is the cause of headache, insomnia, fatigue or other symptoms, estrogen replacement therapy is a logical choice.

The natural oral estrogen-complex provides prompt and effective relief from distressing menopausal symptoms and a gratifying "sense of well-being." "PREMARIN" contains *all* the naturally occurring components of the equine estrogen-complex as water-soluble conjugates. As an added advantage, the four potencies of "PREMARIN" Tablets facilitate dosage control to suit individual requirements.

Recommended dosage: "PREMARIN"® is initially given in daily doses of 1.25 mg. If the response is not sufficient after four or five days, the dosage is increased to 2.5 and up to 3.75 mg. daily, in divided doses. When symptoms are under control, the dosage may be gradually reduced to a maintenance level of 0.625 mg. daily or less. "PREMARIN" is given in approximately 21 day courses with rest periods of five to seven days between courses.

Complete bibliography available on request.

AYERST LABORATORIES
New York, N. Y. • Montreal, Canada

A "SENSE OF WELL-BEING" MEANS A FULLER LIFE

every woman who suffers in the menopause deserves "Premarin," natural oral estrogen prescribed by thousands of physicians

In the menopause (and in the pre- and postmenopausal syndrome) "Premarin" therapy imparts a "sense of well-being," which quickly restores a normal mental outlook and promotes greater enjoyment of everyday living.

Purple Tablets 2.5 mg., 20's, 100's and 1,000's

Yellow Tablets 1.25 mg., 100's and 1,000's

Red Tablets 0.625 mg., 100's and 1,000's

Green Tablets 0.3 mg., 100's and 1,000's

Liquid 0.625 mg. per 4 cc. (tsp.), 120 cc. (4 fl. oz.), bottles

Distressing symptoms are promptly relieved with "Premarin", and a "sense of well-being" is an extra benefit derived from therapy. Average dosage, 1 to 3 tablets (1.25 to 3.75 mg.) daily, in 21 day courses with a rest period of one week. See facing page for more details.

"Premarin" presents the complete equine estrogen-complex. Has no odor—imparts no odor.

"PREMARIN"® Conjugated estrogens (equine)

in the menopause and pre- and postmenopausal syndrome

Ayerst Laboratories, New York, N. Y. • Montreal, Canada

well tolerated...
hypoallergenic

dextrogen®

Dextrogen is a concentrated liquid formula made from whole milk modified with dextrins, maltose and dextrose, and fortified with vitamin D. The cost of baby's formula is less than a penny per ounce.

Well tolerated by all infants because the low fat content is uniformly dispersed by homogenization and is readily emulsified. Easy assimilation of Dextrogen is assured by its mixed carbohydrates which provide for spaced absorption.

Hypoallergenic because special heat treatment decreases the likelihood of protein absorption before reduction to amino acids.

The generous amount of protein in Dextrogen is easily digestible because of zero curd tension.

NESTLÉ
A time-honored name in the field of infant nutrition

THE NESTLÉ COMPANY, INC.
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"The doctor's been expecting you. He's gone for the day."

to reduce cough of diverse etiology

Toclase

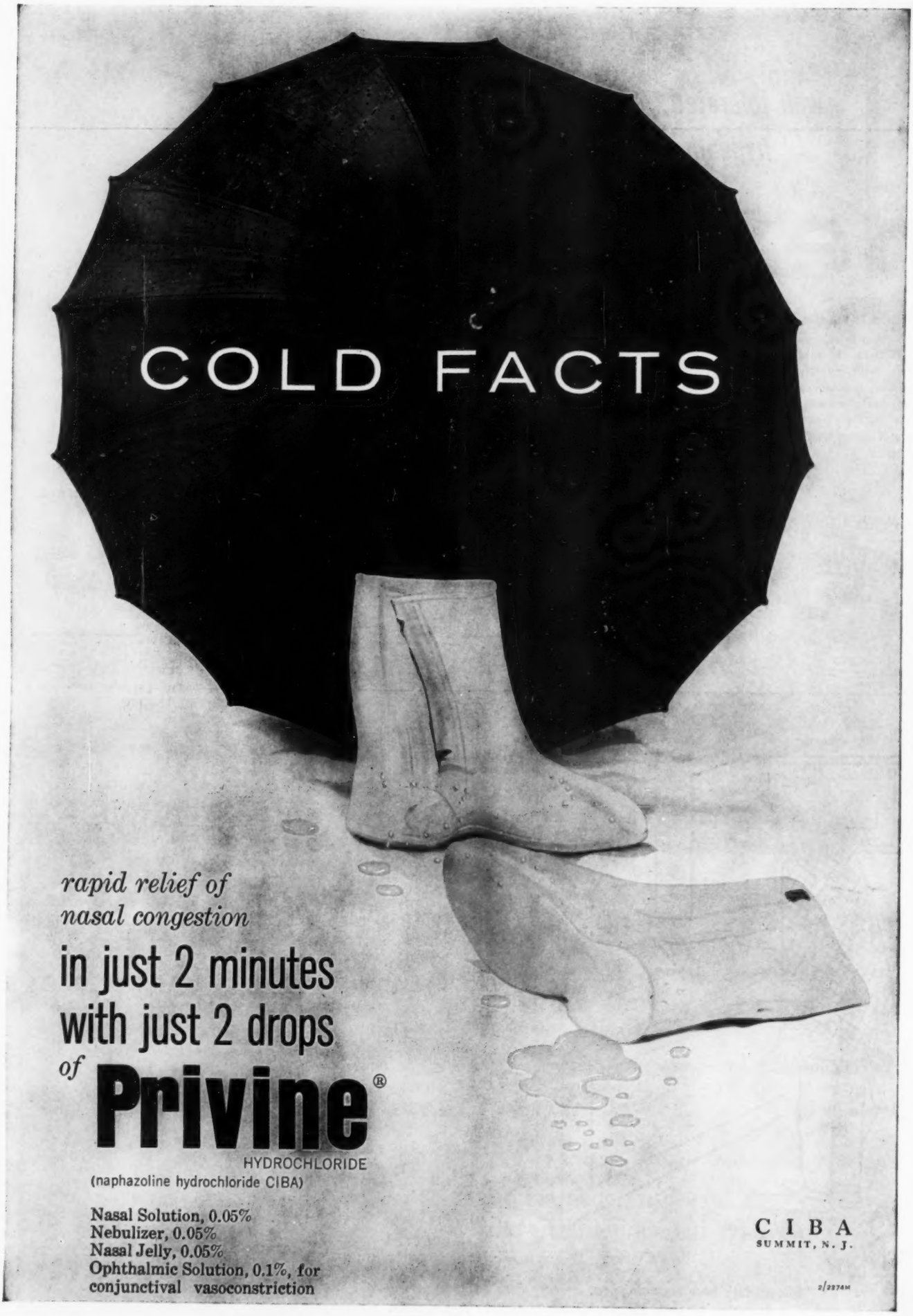
BRAND OF CARBETAPENTANE CITRATE

selective, sure, well tolerated

TOCLASE SYRUP
TOCLASE TABLETS

Pfizer

non-narcotic, non-opiate



rapid relief of nasal congestion

in just 2 minutes with just 2 drops *of*

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HYDROCHLORIDE

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Nebulizer, 0.05%
Nasal Jelly, 0.05%
Ophthalmic Solution, 0.1%, for conjunctival vasoconstriction

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« Washington News »

25 State Society Medicare Contracts Signed • •

Library of Medicine Surveys Dissertation Use • •

More Public Health Service Assignments Shifted • •

Health Conditions of Indians • •

Loans to Medical Schools • •

MEDICARE CONTRACTS

The Defense Department and medical societies that will serve as agents for the provision of medical care outside military facilities for armed forces dependents are moving rapidly toward a conclusion of negotiations. The contracts are expected to be completed with the societies in time for inauguration of the program Dec. 7. Approximately a month before the deadline, 25 societies either had formally signed contracts or had completed negotiations with the Defense Department. Contracts formally signed were with medical societies of Colorado, Washington, Indiana, Oregon, Montana, and Nebraska.

The department said there were no problems serious enough to interfere with formal signing of agreements covering California, Minnesota, Michigan, Wisconsin, North Dakota, North Carolina, Connecticut, Massachusetts, New Jersey, New Hampshire, Vermont, South Dakota, Illinois, Florida, Tennessee, Arkansas, Oklahoma, Wyoming, and Iowa. The Army is the agent for all uniformed services in handing medicare, with operations handled by the Office for Dependent Medical Care, headed by Major Gen. Paul I. Robinson.

SURVEY OF USE OF DOCTORAL DISSERTATIONS

The National Library of Medicine has made a survey on the use of its collection of doctoral dissertations in medicine. It found that the number of these requested per week averaged 19, compared with 35 several years ago, and that the largest number requested were from readers in the library itself, 38% as against 24% for interlibrary loan. Of the 44 universities whose theses were requested, 10 schools account for 64% of all requests.

In reporting on the survey, the library commented: "While it takes pride in its stewardship of the theses collection, the library has occasionally felt it necessary to evaluate the effort put into acquiring, processing, housing and servicing it. In the past few years, especially when space has been at a premium, the question of the considerable shelving which must be used to store the new and also the old theses has come up again and again with various solutions advanced each time. Basically, the position of the library is that if theses are valuable for medical knowledge, the necessary time, money and effort will be found and expended on them, otherwise not. But the value of a medical work is extremely difficult to measure and, like the value of circulating iodine in the thyroid, must be sought for indirectly. One such indirect method of determining the value of material in a library is by examining the frequency of its use." There still remain some unanswered questions, the library adds in a report in its monthly publication, before intelligent decisions can be made about the theses collection.

REASSIGNMENTS IN PUBLIC HEALTH SERVICE

More reassignments in the Public Health Service have been announced in the wake of the major shifts made several weeks ago by Surgeon General Leroy E. Burney. Dr. Donald W. Patrick, director of the 500-bed Clinical Center at Bethesda, Md., has been appointed medical officer in charge of the 541-bed PHS hospital at San Francisco. Dr. Patrick succeeds Dr. Kenneth R. Nelson, who comes to Washington as associate chief of the Bureau of Medical Services.

Dr. Nelson, in turn, fills the post left vacant by Dr. G. Halsey Hunt's appointment as director of a new Center for Research on Aging, to be set up at the National Institutes of Health. Dr. Patrick's post at the Clinical Center has been filled by Dr. Jack Masur, former chief of the Bureau of Medical Services. That bureau is now headed by Dr. John W. Cronin, former director of the PHS Hill-Burton hospital construction program. The bureau supervises PHS hospitals, the Hill-Burton program, Indian health programs, and the foreign quarantine service. In another shift, Dr. Burney appointed Dr. Edgar B. Johnwick as medical officer in charge of the National Leprosarium at Carville, La. He succeeds Dr. Eddie M. Gordon, newly appointed chief quarantine officer at Fort Monroe, Va.

HEALTH CONDITIONS AMONG AMERICAN INDIANS

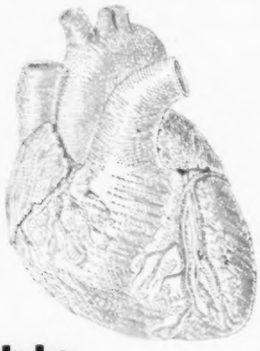
In a question and answer booklet, the Department of the Interior's Bureau of Indian Affairs describes the conditions and problems of the American Indians in health, housing, and other matters. For more than a year, the Indians' health has been the responsibility of the U. S. Public Health Service, but the Bureau of Indian Affairs retains responsibility in other respects. The booklet points out the role of the PHS and notes that costs of Indian medical care are met through annual congressional appropriations. In health matters, the bureau says, the objectives are "to bring the health of the Indians to the level enjoyed by the rest of the population in a way that encourages self-reliance and

(Continued on page 54)

From the Washington Office of the American Medical Association.

'LANOXIN' brand DIGOXIN

formerly known as Digoxin 'B.W. & Co.'®



for prompt digitalization and dependable maintenance

Dear Doctor:

The new name for Digoxin 'B. W. & Co.' is 'LANOXIN'. This change will now make it easier for everyone to distinguish digoxin from digitoxin.

Now, simply write...

'Lanoxin' Tablets 0.25 mg. or 0.5 mg.

to provide the safety and predictability afforded by the uniform potency, uniform absorption, brief latent period and optimum rate of elimination of this crystalline glycoside.

A pure, stable, crystalline glycoside isolated from Digitalis lanata...

(cont'd)

BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, New York

Washington News—Continued

independence and gives full recognition to their rights as citizens. This requires adapting the health program to the customs, traditions, temperament and culture of each tribe."

Health work is described as a cooperative effort between the PHS, the Bureau, tribal organizations, and the individual family members. "Tribal councils usually include committees on health," the report states, "and these committees work cooperatively with public health officials." Many Indians trained as practical nurses and sanitary aides are helping their own people, while employed by the PHS. Also at work on the reservations are some Indians who have medical degrees or nurses training. Other points in the booklet are as follows:

Some tribes completely support their own health facilities, with the full cooperation of the PHS.

The PHS provides direct medical care as well as public health services for disease prevention. Hospitals, sanatoriums, health centers, field clinics, and school infirmaries cooperate, and some Indians are cared for in private facilities at federal expense. In some cases state health departments assist.

To improve Indians' health conditions, the PHS has expanded the quality of curative medical care and at the same time has intensified its program to prevent disease through field health facilities and services, immunizations, case finding, public health nursing activities, maternal and child care, school health, sanitation, health education and dental public health, and curative services. Public health services are furnished without charge, but Indians financially able to do so are expected to pay for medical, hospital, and dental care according to a schedule established by the PHS.

Although originally it appears that Indians and non-Indian settlers were "on about equal terms healthwise," today Indians fall victim to more infectious and preventable conditions, attributable to the "present low standard of living among the Indians."

Although the tuberculosis rate for Indians is far greater than that for the rest of the population (12 times in 1954), progress is being made through x-rays, surgery, occupational therapy, inoculations, antibiotics, and general rehabilitation.

LOANS TO MEDICAL SCHOOLS

The 12th loan to a medical school for construction of dormitory facilities has been made by the Community Facilities Administration (CFA), an affiliate of the Housing and Home Finance Agency. The CFA announced a $1,100,000 loan to Indiana University Medical School for a dormitory addition. Since the program began in 1950, the agency has loaned about 500 million dollars to institutions of higher learning for such improvements as dormitories, dining rooms, student unions, and infirmaries. Of this total some 14 million dollars has gone to 12 medical schools.

Money is loaned for a 40-year period at 2⅞% interest. Criteria for a loan include the following requirements: 1. The institution must offer a two-year program acceptable for full credit toward a baccalaureate degree. 2. The school must be nonprofit. 3. Additions or new construction must not be of extravagant or elabo-

rate design. 4. Construction excludes class rooms, gymnasiums, or stadiums. When Congress voted the program it approved 300 million dollars in loan authority; this was raised to 500 million dollars in 1955 and to 750 million dollars this year. Applications for loans are available at the six regional offices of the housing agency, at New York, Philadelphia, Atlanta, Chicago, Fort Worth, Texas, and San Francisco.

SURVEY OF NURSING HOMES AND GENERAL HOSPITALS

A nationwide survey of the geographical distribution of nursing homes and general hospitals providing skilled nursing service has been completed by the Public Health Service. The report includes 564,826 beds in 5,200 general hospitals and 171,106 beds in 6,531 skilled nursing homes. Patterns of the study reveal that in metropolitan counties there are approximately 4.1 general hospital beds and 1.3 beds in skilled nursing homes for every 1,000 population, while isolated rural counties have 1.8 hospital beds and 0.4 beds in nursing homes for 1,000. The supply of beds tends to increase in proportion to the per capita income and the number of doctors and nurses. Beds in nursing homes increase in accordance with the number of persons aged 65 or older. The complete study was published as Public Health Monograph No. 44, and the patterns are discussed by Jerry Solon and Anna Mae Baney in the October *Public Health Reports*.

DIABETES PROGRAM GUIDE

The Department of Health, Education, and Welfare has published a Diabetes Program Guide to aid states in improving their public health work in this area. The first part of the booklet discusses briefly the groups that might cooperate in conducting a diabetes program, the educational channels that could be used, and the various sectors of the population that would profit most from the program. However, as these factors vary from community to community, the high point of the pamphlet is the detailed outline of diabetes tests, equipment and personnel needed, and costs. The appendix suggests record forms and letter forms. This information provides a concrete basis for planning and conducting a control program. Nationwide use of diabetes control would prevent the occurrence and progression of the disease and would contribute to the scientific knowledge of the disease.

MISCELLANY

The steady expansion of activities for children and the changes in a child's life in the 20th century are reviewed in a new history of the Children's Bureau, "Four Decades of Action for Children." . . . The United States Air Force Medical Service consultants will visit various U. S. A. F. medical installations in Europe and will attend a medical conference in Germany this month. . . . The Atomic Energy Commission announced that the auxiliary monitoring system operated by the Public Health Service has been discontinued. The monitoring system informs the public of the levels of radioactivity in the U. S. However, the AEC continues its own around-the-clock monitoring. . . . The PHS is ready to act on grant applications for aid in building sewage treatment facilities.

(cont'd)

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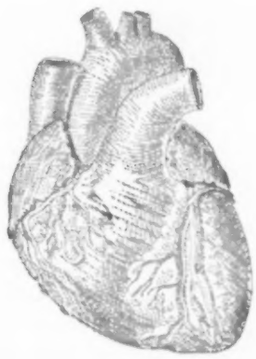

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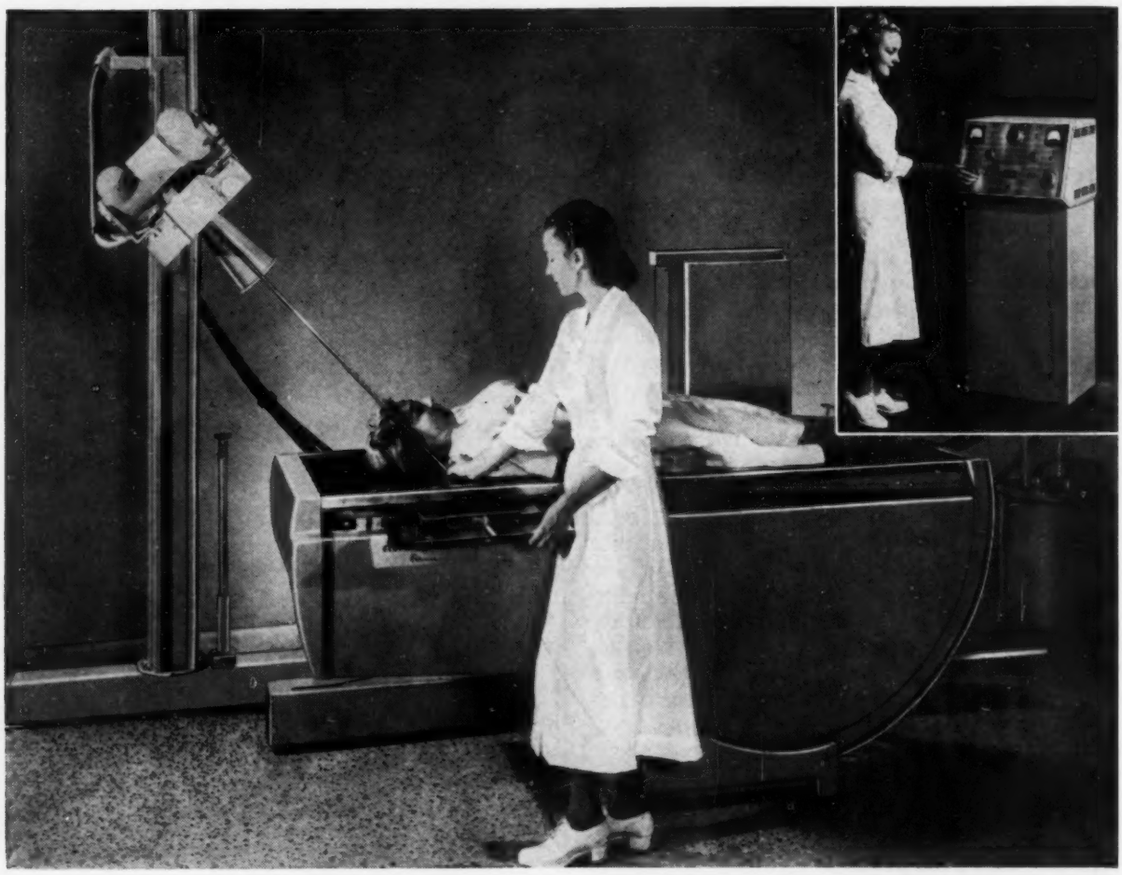

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MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1956 Clinical Meeting, Seattle, Nov. 27-30.

1957 Annual Meeting, New York, June 3-7.

1957 Clinical Meeting, Philadelphia, Dec. 3-6.

1958 Annual Meeting, San Francisco, June 23-27.

1958 Clinical Meeting, Minneapolis, Dec. 2-5.

1959 Annual Meeting, Atlantic City, June 8-12.

AMERICAN ACADEMY OF DENTAL MEDICINE, Hotel New Yorker, Dec. 2. Dr. George Witkin, 45 South Broadway, Yonkers 2, New York, Secretary.

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 8-13. Dr. James R. Webster, 55 East Washington St., Chicago 2, Secretary.

AMERICAN COLLEGE OF CARDIOLOGY, Interim Session, Webster Hall Hotel and Mellon Institute, Pittsburgh, Nov. 28-30. Dr. Philip Reichert, Empire State Building, New York 1, Secretary.

AMERICAN COLLEGE OF CHEST PHYSICIANS, Interim Session, Seattle, Nov. 25-26. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Executive Director.

AMERICAN FRACTURE ASSOCIATION, Drake Hotel, Chicago, Nov. 29-Dec. 2. Dr. Homer D. Junkin, Paris Hospital, Paris, Illinois, Secretary.

AMERICAN RHEUMATISM ASSOCIATION, Interim Session, National Institute of Health, Bethesda, Md., Nov. 30. Dr. Edward F. Hartung, 580 Park Avenue, New York 21, Secretary.

ASSOCIATION FOR RESEARCH IN NERVOUS AND MENTAL DISEASES, Hotel Roosevelt, New York, Dec. 7-8. Dr. Rollo J. Masselink, 700 West 168th St., New York 32, Secretary.

CONNECTICUT CLINICAL CONGRESS, Hotel Statler, Hartford, Dec. 5-6. For information address: Connecticut State Medical Society, 160 St. Ronan St., New Haven, Conn.

NATIONAL ASSOCIATION FOR MENTAL HEALTH, INC., Washington, D. C., Nov. 29-Dec. 1. Mr. Richard P. Swigart, 1790 Broadway, New York 19, Executive Director.

PUERTO RICO MEDICAL ASSOCIATION, San Juan, Dec. 4-9. Dr. Rafael Gil, Box 9111, Santurce, Secretary.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, Palmer House, Chicago, Dec. 2-7. Dr. Donald S. Childs, 713 East Genesee St., Syracuse 2, N. Y., Secretary.

REGIONAL MEETINGS:

AMERICAN COLLEGE OF PHYSICIANS:

Kentucky-Tennessee, Nashville, Tenn., Dec. 8. Dr. Rudolph H. Kampmeier, Vanderbilt University Hospital, Nashville, Tenn., Governor.

Michigan, Ann Arbor, Dec. 1. Dr. H. Marvin Pollard, Ann Arbor, Mich., Governor.

North Carolina, Chapel Hill, Dec. 6. Dr. Elbert L. Persons, Duke Hospital, Durham, N. C., Governor.

SOUTHERN SURGICAL ASSOCIATION, Boca Raton Club and Hotel, Boca Raton, Fla., Dec. 4-6. Dr. George G. Finney, 2947 St. Paul St., Baltimore 18, Secretary.

SOUTHERN THORACIC SURGICAL ASSOCIATION, Hotel Fontainebleau, Miami Beach, Fla., Dec. 7-9. Dr. Hawley H. Seiler, 442 West Lafayette St., Tampa 6, Fla., Secretary.

WESTERN SURGICAL ASSOCIATION, Netherlands Plaza Hotel, Cincinnati, Nov. 29-Dec. 1. Dr. John T. Reynolds, 612 North Michigan Blvd., Chicago 11, Secretary.

FOREIGN AND INTERNATIONAL

ASSEMBLY OF ASSOCIATION OF FRENCH SPEAKING DOCTORS, Great Hall, Faculty of Medicine, 85 Boulevard Saint-Germain, Paris, France, Oct. 16-18, 1957. For information address: General Secretary, Congrés Francais de Médecine, Prof. G. Boudin, Paris, France.

BAHAMAS MEDICAL CONFERENCE, Princess Margaret Hospital, Nassau, Bahamas, Dec. 1-15, 1956. For information address: Dr. B. L. Frank, 4th Floor, 550 Fifth Avenue, New York 36, New York, U. S. A.

CANADIAN MEDICAL ASSOCIATION, Edmonton, Alberta, Canada, June 17-21, 1957. Dr. A. D. Kelly, 150 St. George Street, Toronto 5, Ont., Canada, General Secretary.

CONFERENCE OF ALL INDIA MEDICAL LICENTIATES ASSOCIATION, Delhi, India, Dec. 18-20, 1956. Dr. B. B. Lal Dikshit, Dikshit Niwas, Rakabganj, Agra., India, Secretary.

CONGRESS OF FRENCH SOCIETY OF OPHTHALMOLOGY, Paris, France, May 12-16, 1957. Dr. Marcel Kalt, 81 rue Saint-Lazare, Paris 9e, France, Secretary.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Phoenix, Ariz., U. S. A., April 1-4, 1957. For information address: Dr. A. William Friend, Wade Park Manor, Cleveland 6, Ohio, U. S. A.

CONGRESS OF INTERNATIONAL ASSOCIATION FOR STUDY OF THE BRONCHI, Lisbon, Portugal, May 25-26, 1957. For information address: Prof. F. Lopo de Varvalho, 138 rua de Junqueira, Lisbon, Portugal.

CONGRESS OF INTERNATIONAL SOCIETY FOR CELL BIOLOGY, St. Andrews, Fife, Scotland, Aug. 28-Sept. 3, 1957. Prof. H. G. Callan, Bell Pettigrew Museum, The University, St. Andrews, Fife, Scotland, Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF ORTHOPEDIC SURGERY AND TRAUMATOLOGY, Barcelona, Spain, Sept. 16-21, 1957. For information address: International Society of Orthopedic Surgery and Traumatology, 34, rue Montoyer, Brussels, Belgium.

CONGRESS OF INTERNATIONAL SOCIETY OF SURGERY, Mexico City, Mexico, Oct. 27-Nov. 2, 1957. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

CONGRESS OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, New Delhi, India, Jan. 7-11, 1957. For information address: International Union Against Tuberculosis, 13 rue Pomerue, Paris 16e, France.

FRENCH CONGRESS OF OTOLARYNGOLOGY, Faculte de Medecine de Paris, Paris, France, Oct. 15-18, 1957. For information address: Administrative Secretary, French Congress of Otolaryngology, 17, Rue de Buci, Paris, France.

HEALTH CONGRESS OF ROYAL SOCIETY FOR THE PROMOTION OF HEALTH, Folkestone, Kent, England, April 30-May 3, 1957. Mr. P. Arthur Wells, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

INTER-AMERICAN CONGRESS OF PAN AMERICAN MEDICAL ASSOCIATION, Mexico City, Mexico, Nov. 18-22, 1957. Dr. Joseph J. Eller, 745 Fifth Ave., New York 22, N. Y., U. S. A., Executive Director.

INTERIM CONGRESS OF PAN AMERICAN ASSOCIATION OF OPHTHALMOLOGY, Hotel Statler, New York, N. Y., U. S. A., April 7-10, 1957. Dr. Brittain F. Payne, 17 East 72nd Street, New York 21, N. Y., U. S. A., President.

INTERNATIONAL CONFERENCE ON AUDIOLOGY, Chase Hotel, St. Louis, Mo., U. S. A., May 13-16, 1957. For information address: Dr. S. Richard Silverman, Central Institute for the Deaf, 818 South Kingshighway, St. Louis, Mo., U. S. A.

INTERNATIONAL CONFERENCE ON THE INFLUENCE OF LIVING AND WORKING CONDITIONS ON HEALTH, Cannes, France, Sept. 27-29, 1957. For information address: Secretariat, World Congress of Doctors, Vienna 1, Wollzeile 29/3, Austria.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, Brussels, Belgium, July 15-20, 1957. Prof. M. Welsch, Service de Bacteriologie et de Parasitologie, Universite de Liege, 32 Blvd., de la Constitution, Liege, Belgium, Secretary General.

INTERNATIONAL CONGRESS OF DERMATOLOGY, Stockholm, Sweden, July 31-Aug. 6, 1957. Dr. C. H. Floden, Karolinska, Sjukhuset, Hudkliniken, Stockholm 60, Sweden, Secretary General.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Brussels, Belgium, July 21-28, 1957. For information address: Dr. R. G. Bickford, Mayo Clinic, Rochester, Minnesota, U. S. A.

INTERNATIONAL CONGRESS OF EUROPEAN SOCIETY OF HAEMATOLOGY, Copenhagen, Denmark, Aug. 26-31, 1957. Dr. Aage Videbask, Blegdamsvej 11, Copenhagen, Denmark, Secretary General.

INTERNATIONAL CONGRESS OF INTERNATIONAL SOCIETY OF ANGIOLOGY, Mexico City, Mexico, Oct. 29-Nov. 2, 1957. Dr. H. Haimovici, 105 East 90th Street, New York 28, New York, U. S. A., Secretary General.

INTERNATIONAL CONGRESS OF INTERNATIONAL SOCIETY OF BRONCHOESOPHAGOLOGY, Philadelphia, Pennsylvania, U. S. A., May 12-13, 1957. Dr. Chevalier L. Jackson, 3401 North Broad St., Philadelphia 40, Pennsylvania, U. S. A., Secretary.

INTERNATIONAL CONGRESS ON MEDICAL AND SCIENTIFIC FILM, Palace of Expositions at the Valentino, Turin, Italy, June 1-9, 1957. For information address: Secretariat, Minerva Medica. Corso Bramante 83-85, Turin, Italy.

INTERNATIONAL CONGRESS ON MEDICINE AND SURGERY, Palazzo of Expositions at the Valentino, Turin, Italy, June 1-9, 1957. For information address: Segreteria Generale, Minerva Medica. Corso Bramante 83-85, Turin, Italy.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Beograd and Opatija, Yugoslavia, Sept. 29-Oct. 5, 1957. Colonel Dr. Aleksandar Mezic, rue Nemanjina 15, Beograd, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESS OF NEUROLOGICAL SCIENCES, Brussels, Belgium, July 21-28, 1957. For information address: Dr. Pearce Bailey, National Institute of Health, Bethesda 14, Maryland, U. S. A.

INTERNATIONAL CONGRESS OF NEUROPATHOLOGY, Brussels, Belgium, July 21-28, 1957. Dr. Ludo Jan Bogaert, 47 rue de l'Harmonic, Antwerp, Belgium, Secretary General.

INTERNATIONAL CONGRESS OF NEUROSURGERY, Brussels, Belgium, July 21-28, 1957. For information address: Dr. William B. Scoville, 85 Jefferson Street, Hartford, Connecticut, U. S. A.

INTERNATIONAL CONGRESS OF NUTRITION, Paris, France, July 24-29, 1957. For information address: Congress International de Nutrition, 71 Blvd. Pereire, Paris 17e, France.

INTERNATIONAL CONGRESS ON OCCUPATIONAL HEALTH, Helsinki, Finland, July 1-6, 1957. Dr. Pentti Sumari, c/o Tyoter Veyslaitos, Haattmaninkatu 1, Helsinki-Toolo, Finland, Secretary General.

INTERNATIONAL CONGRESS OF OTOLARYNGOLOGY, Hotel Statler, Washington, D. C., U. S. A., May 5-10, 1957. Dr. Paul H. Holinger, 700 North Michigan Ave., Chicago 11, Illinois, U. S. A., General Secretary.

INTERNATIONAL CONGRESS OF PHOTOBIOLOGY, Torino, Italy, June 2-8, 1957. For information address: Prof. Enrico Benassi, Dept. of Radiology, University of Torino, Torino, Italy.

INTERNATIONAL CONGRESS ON RHEUMATIC DISEASES, Toronto, Ont., Canada, June 23-28, 1957. For information address: International Congress on Rheumatic Diseases, P. O. Box 237, Terminal "A," Toronto, Ont., Canada.

INTERNATIONAL GERONTOLOGICAL CONGRESS, Merano-Bolzano, Italy, July 14-19, 1957. For information address: Segreteria, Quarto Congresso Internazionale de Gerontologia, Viale Morgagni, 85, Firenze, Italy.

(Continued on page 60)

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INTERNATIONAL LEAGUE AGAINST EPILEPSY, Brussels, Belgium, July 21-28, 1957. Dr. Radermecker, Institut Bunge, 59 rue Philippe Milliot, Berchem, Antwerp, Belgium, Secretary General.

INTERNATIONAL NEUROLOGICAL CONGRESS, Brussels, Belgium, July 21-28, 1957. Dr. Ludo van Bogaert, Institut Bunge, 59 rue Philippe Milliot, Berchem, Antwerp, Belgium, Secretary General.

INTERNATIONAL SCIENTIFIC CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, University City, Mexico, D. F., Mexico, Feb. 24-28, 1957. For information address: Secretary, Mexican Congress, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Ill., U. S. A.

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY, Paris, France, July 9-12, 1957, Dr. Fred C. Roulet, Hebelstr. 24, Basel, Switzerland, Secretary General.

INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, London, England, July 22-27, 1957. For information address: Miss M. Drury, 34 Eccleston Square, London S.W.1, England.

INTERNATIONAL SYMPOSIUM ON MEDICAL-SOCIAL ASPECTS OF SENILE NERVOUS DISEASES, Venice, Italy, July 20-21, 1957. For information address: Secretariate, Viale Morgagni 85, Firenze, Italy.

INTERNATIONAL VOICE CONFERENCE (LARYNGEAL RESEARCH FUNCTION AND THERAPY), Chicago, Illinois, U. S. A., May 20-22, 1957. For information address: Dr. Hans von Leden, 30 North Michigan Ave., Chicago 2, Illinois, U. S. A.

NEURORADIOLOGIC SYMPOSIUM, Brussels, Belgium, July 21-28, 1957. For information address: Professor Melot, Hôpital Universitaire St. Pierre, Brussels, Belgium, Secretary General.

PACIFIC SCIENCE CONGRESS, Bangkok, Thailand, Nov. 18-Dec. 2, 1957. For information address: Pacific Science Council Secretariat, Bishop Museum, Honolulu 17, Hawaii.

PAN AMERICAN CONGRESS ON CANCER CYTOLOGY, Eden Roc Hotel, Miami Beach, Fla., U. S. A., April 25-29, 1957. Dr. J. Ernest Ayre, 1155 N.W. 14th St., Miami, Fla., U. S. A., General Chairman.

PAN AMERICAN CONGRESS OF ENDOCRINOLOGY, Buenos Aires, Argentina, Nov. 3-9, 1957. For information address: Secretaria General, Sociedad Argentina de Endocrinologia y Metabolisms, Santa Fe 1171, Buenos Aires, Argentina.

PAN-PACIFIC SURGICAL CONGRESS, Honolulu, T. H., Nov. 14-22, 1957. Dr. F. J. Pinkerton, Room 230, Young Bldg., Honolulu, T. H., Director General.

WILLIAM HARVEY TERCENTENARY CONGRESS, Royal College of Surgeons, London, England, June 3-7, 1957. Dr. D. Geraint James, Harveian Society of London, 11 Chandos St., Cavendish Square, London, W.1, England, Honorary Secretary.

WORLD CONGRESS FOR ACUPUNCTURE, Vienna, Austria, May 25-28, 1957. For information address: Austrian Association for Acupuncture, XV, Schwenderstrasse 57, Vienna, Austria.

WORLD CONGRESS OF PSYCHIATRY, Zurich, Switzerland, Sept. 1-7, 1957. Prof. J. Wyrsch, Stans, Lucerne, Switzerland, Secretary General.

WORLD MEDICAL ASSOCIATION, Istambul, Turkey, Sept. 29-Oct. 5, 1957. Dr. Louis H. Bauer, 10 Columbus Circle, New York 19, New York, U. S. A., Secretary General.

"German measles? Why for heaven's sake, I've never been outside of this country!!"

MAGAZINE—TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Sunday, Nov. 25

ABC-TV, 4:30 p. m. EST. "Medical Horizon" previews the American Medical Association's Clinical Session in Seattle with a presentation from Seattle's Children's Orthopedic Hospital. The program is produced in cooperation with the American Medical Association.

Tuesday, Nov. 27

NBC-TV, 9:30 p. m. EST. "March of Medicine" presents "Monganga," a full hour film that tells about the work of a mission doctor in a remote Belgian Congo village. The program, produced in cooperation with the American Medical Association, will be the first network show on a medical subject to be telecast in color.

MAGAZINES

Saturday Evening Post, Nov. 10, 1956

"The Struggle to Heal," by John Bartlow Martin

In the conclusion of a six-part series on mental illness, the author tells what is being done to "cope with the problem."

Family Weekly Magazine, Nov. 11, 1956

"Spare Parts Are Saving Lives," by Jack Ryan

"Several medical centers now operate spare part banks, consisting mostly of corneas of the eye, artery lengths, skin, bone and muscle. . . . While transplant operations still hold many mysteries, the success of current experiments should hasten the day when many of us will take a new lease on life through use of human spare parts."

Redbook, November, 1956

"The Best Buys in Health Insurance," by Morton Yarmon

The author outlines five types of health insurance and answers the questions "Who sells health insurance?" and "How much should you carry?"

Parade, Nov. 18, 1956

"Our Forgotten Mental Patients—Who Are They?" by Robert P. Goldman and Sid Ross.

The magazine publishes part 2 of an article that says: "There are at least 60,000 mental DP's—patients who don't belong in mental hospitals because they are improved sufficiently for release, or should not have been committed in the first place."

Colliers, Nov. 23, 1956

"Chemicals to Starve Out Cancer," by Claude Stanush

"In the past few years chemotherapy has become medicine's best hope for the eventual control of cancer." The author says "promising leads" are the antimetabolites, use of viruses to attack tumors, hormone therapy and the possible discovery of a natural "defense mechanism."

Pageant, December, 1956

"All About Coughs," by Lawrence Galton

"Recent studies have . . . provided a good deal of useful insight into why we cough and how and when; on how to stop a cough and which cough to stop. New treatments have been produced; even some effective old ones rediscovered."

"The Cure No One Dares Talk About," by Albert Abarbanel

The author says "perineometer therapy" of pelvic muscles is "offering hope to one of the most tragic figures in our society—the frigid wife."

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From other Pages

Hans Wilhelm Geiger

Divine curiosity and a childlike impetus to play are, Einstein told us, the driving forces of the true investigator. If any scientist fills this definition, he is Hans Wilhelm Geiger, with his desire to explore the unknown and his enjoyment of the ingenious devices of his own design. Those who were fortunate enough to witness one of Geiger's presentations of a problem in modern physics will never forget the . . . performance. They will recall Geiger's pleasure, pride, and happiness when, with the counter clicking, he would convince his audience of the transmutation of the atom, and of the existence of a world beyond that revealed to the unaided senses. This world fascinated Geiger and inspired him. . . . His great achievements are the Geiger-Nuttall relation, Geiger point counter, Geiger-Mueller counter, and the coincidence principle. The trend of Geiger's contribution is revealed in his [doctoral] thesis . . . which was . . . presented on 23 July 1906. . . .

Geiger's problem originated in the studies of one of the professors of the Physics Institute [at the University of Erlangen], A. Wehnelt, who discovered the Wehnelt cathode. The problem involved experiments with and measurements of electric discharges in vacuum tubes, and it served to make Geiger familiar with a technique so fundamental to his later discoveries. The years 1906-1912 Geiger spent in England with Ernest Rutherford, exploring and investigating the fundamentals of radioactivity. Soon he became known by his valuable contributions to the new field, and in 1912 he was appointed head of the new Laboratory for Radioactivity of the Physikalisch-Technische Reichsanstalt in Berlin. . . . The outstanding experiment of the years . . . [in Berlin] was the confirmation of the Compton effect in 1925, using two Geiger point counters in coincidence for the simultaneous detection of the scattered quantum and of the recoil electron.

In 1925 Geiger accepted the chair of physics at the University of Kiel, specializing in the development of new counting devices. . . . In 1928 the first publication on a new counting device, later called the Geiger-Mueller counter, appeared . . . opening a wealth of stimulation and progress in nuclear research. . . . In 1936 Geiger moved to Berlin-Charlottenburg as chief of the physics department of the Technical University. . . . He found time for research in cosmic-radiation physics, artificial radioactivity, and uranium fission. In 1940 a painful rheumatic condition confined him to bed. In June 1945 his home near Babelsberg was occupied. He lost all his possessions and . . . he died on 24 September, 1945. . . . Today he is celebrated as one of the outstanding pioneers of the atomic age.—A. T. Krebs, Hans Geiger, *Science*, July 27, 1956.

Your Emergency Supply Cupboard

The Federal Civil Defense Administration urges all persons and families in both urban and rural areas "to keep on hand a 7-day emergency home food supply, and a 3-day personal evacuation-survival kit." The purpose of this precaution is to assist "target areas in developing flexible plans combining evacuation and shelter for endangered populations in . . . a nuclear attack.

The 7-day home food supply is urged because attack may cut off regular sources of food. Persons who could not be evacuated immediately might have to depend on home resources.

The 7-day supply should include water, canned and dehydrated foods such as fruit and other juices, milk and milk powder, vegetables, soups, stews, meats, fish, cheese, bread, infant food and beverages. Supplements of sugar, salt, seasonings, hard candy, and chewing gum also were suggested. All foods should be in sealed packages, jars or cans, and should be stored in the family shelter area.

The water supply suggested is two gallons for each person, plus one additional gallon for each child under three years of age.

The 3-day personal evacuation survival kit, recommended for "enroute evacuation periods" and before mass-feeding facilities could be established at reception centers, should include food, water, first-aid items and any special medicines needed by chronically ill persons. It should be lightweight, small, and be packed in some kind of durable container.

Other general survival items that are suggested include: jackknife, flashlight, matches, disposable eating utensils, one or two cooking utensils, and a small nonelectric stove. A shovel and crowbar are recommended to supplement home and car tools. A portable battery-operated radio and extra batteries—to receive civil defense emergency broadcasts—is a must for proper survival preparedness.

"Although the primary objective of the current civil defense planning is to move people out of target areas, the possibility of radioactive fallout makes it desirable to develop flexible evacuation operations and to provide for sheltering people where evacuation is not possible."—*American Journal of Nursing*, September, 1956.

"Brain Washing" by the Communist State Police

The term "brain washing," originated by a reporter who interviewed Chinese refugees in Hong Kong, has caught the public fancy and has gained wide acceptance. Various authors have attempted to provide a scientific definition for this term. This has had the effect of confirming the general impression that "brain washing" is an esoteric technique for the manipulation of human behavior, designed by "scientific investigators" on the basis of laboratory experiments and controlled observations, and producing highly predictable results. Many of the public speculations about "brain washing" are not supported by the available evidence. . . .

Details of the Communist arrest and interrogation systems, and a great deal of information about the purposes, attitudes, and training of those who administer them, were obtained . . . and the conclusions which have been drawn from them . . . may be summarized thus: 1. The interrogation methods used by the state police in Communist countries are elaborations and refinements of police practices, many of which were known and used before the Russian Communist Revolution. 2. The principles and practices used by the Communist state police in the development of suspects, the accumulation of evidence, and the carrying out of arrest, detention, interrogation, trial, and punishment are known. The effects of these upon prisoners are known also. 3. The "confessions" obtained by Communist state police are readily understandable as results of the methods used. 4. Communist methods of indoctrinating prisoners of war were developed by the Russians and subsequently refined by the Chinese. These methods and their effects are known also. 5. Chinese methods of dealing with political prisoners and "enemies of the state" were adapted from those of the Russians. 6. The intensive indoctrination of political prisoners is a practice primarily used by the Chinese Communists. The methods used in this indoctrination are known, and their effects are understandable.—L. E. Hinkle Jr., M.D., and H. G. Wolff, M.D., Communist Interrogation and Indoctrination of "Enemies of the State": Analysis of Methods Used by the Communist State Police (A Special Report), *A. M. A. Archives of Neurology and Psychiatry*, August, 1956.

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"...dioctyl sodium sulfosuccinate [Doxinate] results in restoration of normal function both in terms of stool consistency and frequency."

—CASS, L.J., AND FREDERIK, W.S.: AM. J. GASTROENTEROL. (DEC.) 1956.

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1. Crandon, J. H.: Nutrition in Surgical Patients, J.A.M.A. *158*:264 (May 28) 1955.
2. Elman, R.: Protein Needs in Surgical Patients, J. Am. Dietet. A. *32*:524 (June) 1956.
3. Flinn, L. B.; Goodhart, R. S.; Kaye, R.; Mackie, J. A., and Ravdin, R. G.: Vitamins and Other Nutrition Factors in Clinical Practice; a Panel Discussion, Delaware M. J. *28*:51 (Mar.) 1956.
4. Ravdin, I. S., and Zintel, H. A.: Nutrition in the Care of the Surgical Patient, in Wohl, M. G., and Goodhart, R. S.: Modern Nutrition in Health and Disease—Dietotherapy, Philadelphia, Lea & Febiger, 1955, p. 857.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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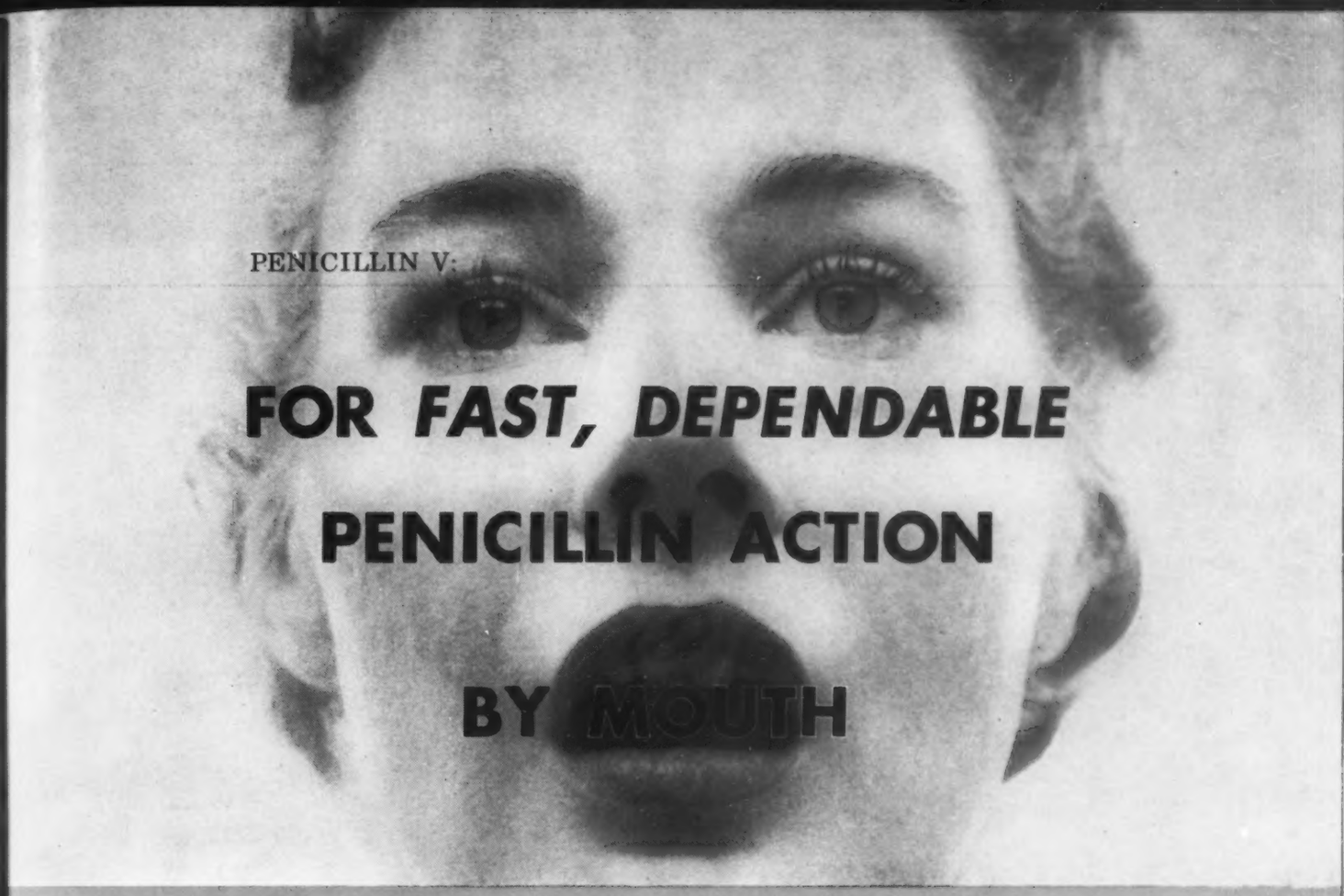

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1. Welch, H.: Antibiotic Med. *2*:11 (Jan.) 1956.

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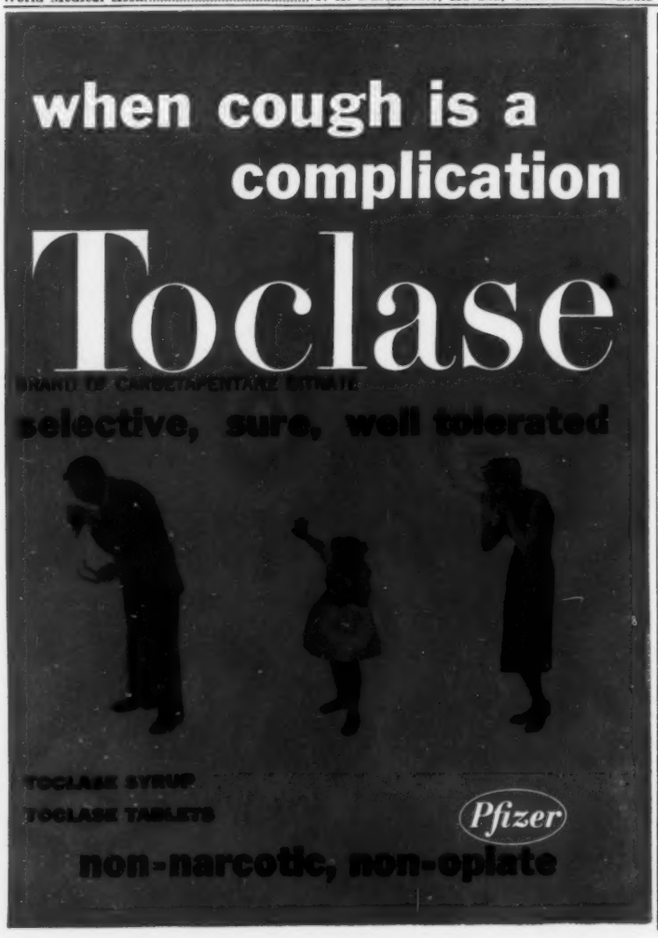
NATIONAL ORGANIZATIONS OF MEDICAL INTEREST

SOCIETY	PRESIDENT	SECRETARY	MEETING
American Public Health Association	Ira V. Hiscock, New Haven, Conn.	R. M. Atwater, 1790 Broadway, New York 19	
Radium Society	N. A. McCormick, Windsor, Ont., Canada	Theodore R. Miller, 139 East 36th St., New York 16	Quebec City, Can., May 30-June 1
Rheumatism Assn.	William D. Robinson, Ann Arbor, Mich.	Edward F. Hartung, 580 Park Ave., New York 21	Toronto, Can., June 23-28
Roentgen Ray Society	W. Edward Chamberlain, Philadelphia 40	Barton R. Young, Germantown Hosp., Philadelphia 44	Washington, D. C., Oct. 1-4
School Health Assn.	L. P. Barrett, Fort Worth, Tex.	A. O. DeWeese, 515 E. Main St., Kent, Ohio	
Society for Clinical Investigation	A. McGehee Harvey, Baltimore 5	J. D. Meyers, U. of Pittsburgh, Sch. of Med., Pittsburgh 12	
Society for Experimental Pathology	Frank W. Hartman, Detroit	Cyrus C. Erickson, 858 Madison Ave., Memphis 3, Tenn.	Chicago, April 15-19
Society for Pharm. & Ex. Ther.	Harry Beckman, Milwaukee 3	Harold Hodge, Univ. of Rochester, Rochester 20, N. Y.	French Lick, Ind., Nov. 8-10
Society for the Study of Sterility	W. T. Pommerenke, Rochester, N. Y.	H. H. Thomas, 920 S. 19th St., Birmingham, Ala.	New York, May 31-June 2
Society of Anesthesiologists	Scott M. Smith, Salt Lake City 11	J. E. Remlinger, Jr., 188 W. Randolph St., Chicago 1	
Society of Biological Chemists	H. E. Carter, Urbana, Ill.	Philip Handler, Duke University, Durham, N. C.	Chicago, April 15
Society of Clinical Pathologists	John L. Goforth, Dallas, Texas	C. G. Culbertson, 1040 W. Michigan St., Indianapolis 6	New Orleans, Sept. 29-Oct. 4
Society of Maxillofacial Surgeons	Douglas B. Parker, New Orleans	John A. Drummond, 1414 Drummond St., Montreal 25, Can.	Minneapolis, May 12-15
Society of Tropical Medicine & Hygiene	Asa C. Chandler, Houston 1, Texas	John E. Larsh, Jr., Univ. of N. Car., Chapel Hill, N. C.	
Surgical Assn.	Loyal Davis, Chicago	R. Kennedy Gilchrist, 59 E. Madison St., Chicago 3	Chicago, May 8-10
Therapeutic Society	Gerald H. Pratt, New York	O. B. Hunter, Jr., 915 19th St., N.W., Washington, D. C.	New York, May 30-June 2
Trudeau Society	Paul C. Samson, Lafayette, Calif.	William G. Childress, 1790 Broadway, New York 19	Kansas City, Mo., May 6-9
Urological Assn.	George C. Prather, Brookline 46, Mass.	Samuel L. Raines, 188 S. Bellevue Blvd., Memphis, Tenn.	Pittsburgh, May 6-9
Venereal Disease Assn.	Ivan E. Martin, Modesto, Calif.	S. R. Taggart, 300 Indiana Ave. N.W., Wash. 1, D. C.	
Veterinary Medical Assn.	Floyd Gross, Fort Collins, Colo.	J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5	
Assn. for Research in Nervous & Ment. Dis.	Harry Solomon, Boston	Rollo J. Masselink, 700 W. 168th St., New York 32	New York, Dec. 7-8
Assn. for Research in Opthalmology	William B. Clark, New Orleans	Lorand V. Johnson, 10515 Carnegie Ave., Cleveland 6	
Assn. of American Medical Colleges	Robert A. Moore, Pittsburgh	Dean F. Smiley, 185 N. Wabash Ave., Chicago	
Assn. of American Physicians	C. Phillip Miller, Chicago 37	P. B. Beeson, Yale U. Sch. of Med., New Haven 11, Conn.	Atlantic City, N. J., May 7-8
Assn. of Life Ins. Med. Dir. of America	Ralph R. Simmons, Des Moines, Iowa	Henry B. Kirkland, P. O. Box 594, Newark 1, N. J.	
Assn. of Medical Illustrators	Mr. Leon Schlossberg, Baltimore 5	Miss Rose M. Reynolds, 42nd and Dewey Ave., Omaha 5	
Assn. of Military Surgeons of U. S.	W. Dana, U.S.N., Washington 25, D. C.	R. E. Bitner, 1726 I St., N.W., Washington 6, D. C.	
Assn. of State & Territorial Health Officers	Daniel Bergsma, Trenton, N. J.	Franklin D. Yoder, State Board of Health, Cheyenne, Wyo.	
Biological Photographic Assn.	Mr. H. Lou Gibson, Rochester 4, N. Y.	Miss J. Waters, Box 1668, Grand Central P. O., N. Y. 17	
Central Assn. of Ob. & Gyn.	Harold L. Gainey, Kansas City, Mo.	Edwin J. DeCosta, 104 S. Michigan Ave., Chicago 3	
Central Neuropsychiatric Assn.	Francis J. Gerty, Chicago	Hamilton Ford, 112 North Blvd., Galveston, Texas	
Central Society for Clinical Research	Randall Sprague, Rochester, Minn.	Robert H. Ebert, 950 E. 59th St., Chicago 37	
Central Surgical Assn.	Robert M. Zollinger, Columbus 10, Ohio	Charles D. Branch, 102 North St., Peoria, Ill.	Chicago, Feb. 21-23
Clinical Orthopaedic Society	I. S. McReynolds, Houston, Texas	Marcus J. Stewart, 869 Madison Ave., Memphis, Tenn.	
College of American Pathologists	W. A. D. Anderson, Miami, Fla.	A. H. Dearing, Prudential Plaza, Suite 2115, Chicago 1	
Gerontological Society	William B. Kountz, St. Louis 9	Nathan W. Shock, Baltimore City Hospitals, Baltimore 24	
Industrial Medical Association	E. S. Jones, Hammond, Ind.	H. Glen Gardiner, Inland Steel Co., East Chicago, Ind.	St. Louis, April 22-26
Interstate Postgrad. Med. Assn. of N. A.	J. Mather Pfeiffenberger, Alton, Illinois	Edwin R. Schmidt, Box 1109, Madison 1, Wis.	Chicago, Sept. 30-Oct. 3
Medical Library Assn.	Miss Bertha B. Hallam, Portland 1, Ore.	Mrs. H. T. Perkins, 333 Cedar St., New Haven 11, Conn.	New York, May 6-10
National Medical Assn.	Theodore R. M. Howard, Chicago	John T. Givens, 1108 Church St., Norfolk 10, Va.	Cleveland, Aug. 12-15
National Multiple Sclerosis Society	Mr. Ralph C. Glock, New York	Mr. Donald Vail, 270 Park Ave., New York 17	New York, March, 1957
National Proctologic Assn.	R. A. Winters, Chicago	George E. Mueller, 59 E. Madison St., Chicago 2	
National Tuberculosis Assn.	Howard W. Bosworth, Los Angeles 26	Mrs. Morrell DeReign, 1790 Broadway, New York 19	Kansas City, Mo., May 5-10
Neurosurgical Society of America	Joshua A. Speigel, Chicago 2	Frank P. Smith, 260 Crittenden Blvd., Rochester 20, N. Y.	Palm Springs, Calif., Jan. 16-19
Radiological Society of North America	Clarence E. Hufford, Toledo, Ohio	D. S. Childs, 713 E. Genesee St., Syracuse 2, N. Y.	Chicago, Dec. 2-7
Society for Investigative Dermatology	Maximilian E. Obermayer, Los Angeles 5	Herman Beerman, 255 S. 17th St., Philadelphia 3	New York, June 1-2
Society for Pediatric Research	William M. Wallace, Cleveland 6	Sydney S. Gellis, 330 Brookline Ave., Boston 15	Carmel, Calif., June 16-21
Society for Vascular Surgery	Arthur H. Blakemore, New York 32	Henry Swan, 4200 East 9th Ave., Denver 20	New York, June 2
Society of American Bacteriologists	C. A. Stuart, Providence, R. I.	J. H. Bailey, Sterling-Winthrop Res. Inst. Rensselaer, N. Y.	Detroit, April 28-May 2
Society of Biological Psychiatry	Margaret A. Kennard, Vancouver, B. C.	George N. Thompson, 2010 Wilshire Blvd., Los Angeles 57	Atlantic City, N. J., June 15-16
Society of Clinical Surgery	Richard K. Gilchrist, Jr., Chicago	F. F. Albritten, Jr., Univ. of Kans., Kansas City, Kan.	
Society of Neurological Surgeons	Edgar F. Fincher, Emory University, Ga.	Bronson S. Ray, 525 E. 68th St., New York 21	
Society of University Surgeons	Harold A. Zintel, Philadelphia 4	James Hardy, Hospital of the U. of Miss., Jackson, Miss.	Columbus, Ohio, Feb., 1957
Southeastern Surgical Congress	J. O. Morgan, Gadsden, Ala.	B. T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga.	St. Petersburg, Fla., April 1-4
Southern Medical Assn.	W. Raymond McKenzie, Baltimore 1	Mr. V. O. Foster, Empire Bldg., Birmingham 3, Ala.	
Southern Surgical Assn.	Deryl Hart, Durham, N. C.	George G. Finner, 2947 St. Paul St., Baltimore 18	Boca Raton, Fla., Dec. 4-6
Southwestern Medical Assn.	John Dettweiler, Albuquerque, N. Mex.	Russell L. Deter, 1501 Arizona St., El Paso, Tex.	Albuquerque, N. Mex., 1956
Southwestern Surgical Congress	John V. Goode, Dallas, Texas	C. M. O'Leary, 207 Plaza Court Bldg., Oklahoma City	Wichita, Kans., April 15-17
Student American Medical Assn.	Mr. Kent Guild, Chicago	Mr. Russell F. Staudacher, 510 N. Dearborn St., Chicago 10	Philadelphia, May 3-5
The Endocrine Society	Warren O. Nelson, New York	H. H. Turner, 1200 N. Walker St., Oklahoma City	
U. S. Section, Internat'l Coll. of Surgeons	Curtice Rosser, Dallas, Texas	Karl Meyer, 1516 Lake Shore Dr., Chicago	Chicago, Sept. 9-12
Western Industrial Medical Assn.	Packard Thurber Jr., Los Angeles 14	Edward J. Zaik, 740 S. Olive St., Los Angeles 14	
Western Orthopedic Assn.	James Lytton-Smith, Phoenix, Ariz.	John Ricker, 926 E. McDowell Rd., Phoenix	
Western Society of Electro-Encephalography	Arthur A. Ward Jr., Seattle	S. N. Berens, 902 Boren Ave., Seattle	
Western Surgical Assn.	Charles G. Johnston, Detroit	John T. Reynolds, 612 N. Michigan Blvd., Chicago 11	Cincinnati, Nov. 29-Dec. 1
Woman's Auxiliary to the Am. Med. Assn.	Mrs. Robert Flanders, Manchester, N. H.	Miss Margaret Wolfe, 535 N. Dearborn St., Chicago 10	New York, June 3-7
World Medical Assn.	J. A. Bustamente, Havana, Cuba	Louis H. Bauer, 10 Columbus Circle, New York 19	Istambul, Turkey, Sept. 27-Oct. 5



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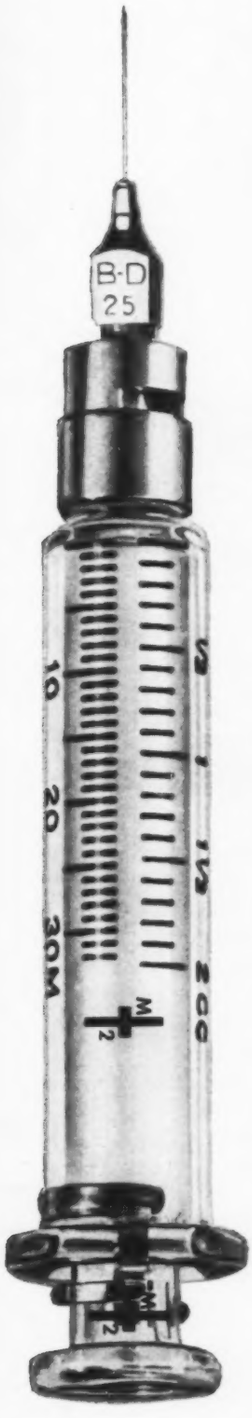

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1. Moyer, J. H., in discussion of Galen, W. P., and Duke, J. E.: Outpatient Treatment of Hypertension with Hexamethonium and Hydralazine, South, M. J. *47*:858 (Sept.) 1954.
2. Finnerty, F. A., Jr.: The Value of Rauwolfia Serpentina in the Hypertensive Patient, Am. J. Med. *17*:629 (Nov.) 1954.
3. Cronheim, G., and Toekes, I. M.: Comparison of Sedative Properties of Single Alkaloids of Rauwolfia and Their Mixtures, Meet. Am. Soc. Pharmacol. & Exper. Therap., Iowa City, Iowa, Sept. 5, 1955.
4. Moyer, J. H.; Dennis, E., and Ford, R.: Drug Therapy (Rauwolfia) of Hypertension. II. A Comparative Study of Different Extracts of Rauwolfia When Each Is Used Alone (Orally) for Therapy of Ambulatory Patients with Hypertension, A.M.A. Arch. Int. Med. *96*:530 (Oct.) 1955.

The dose-response curve of Rauwiloid is flat, and its dosage is uncomplicated and easy to prescribe... merely two 2mg. tablets at bedtime.

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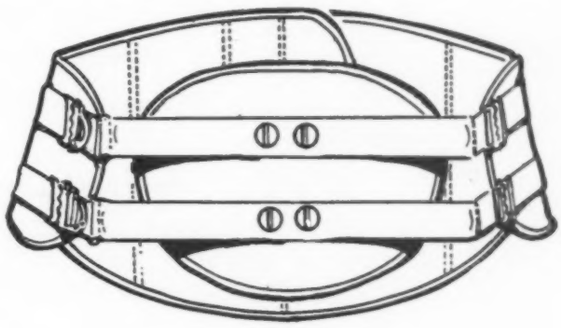

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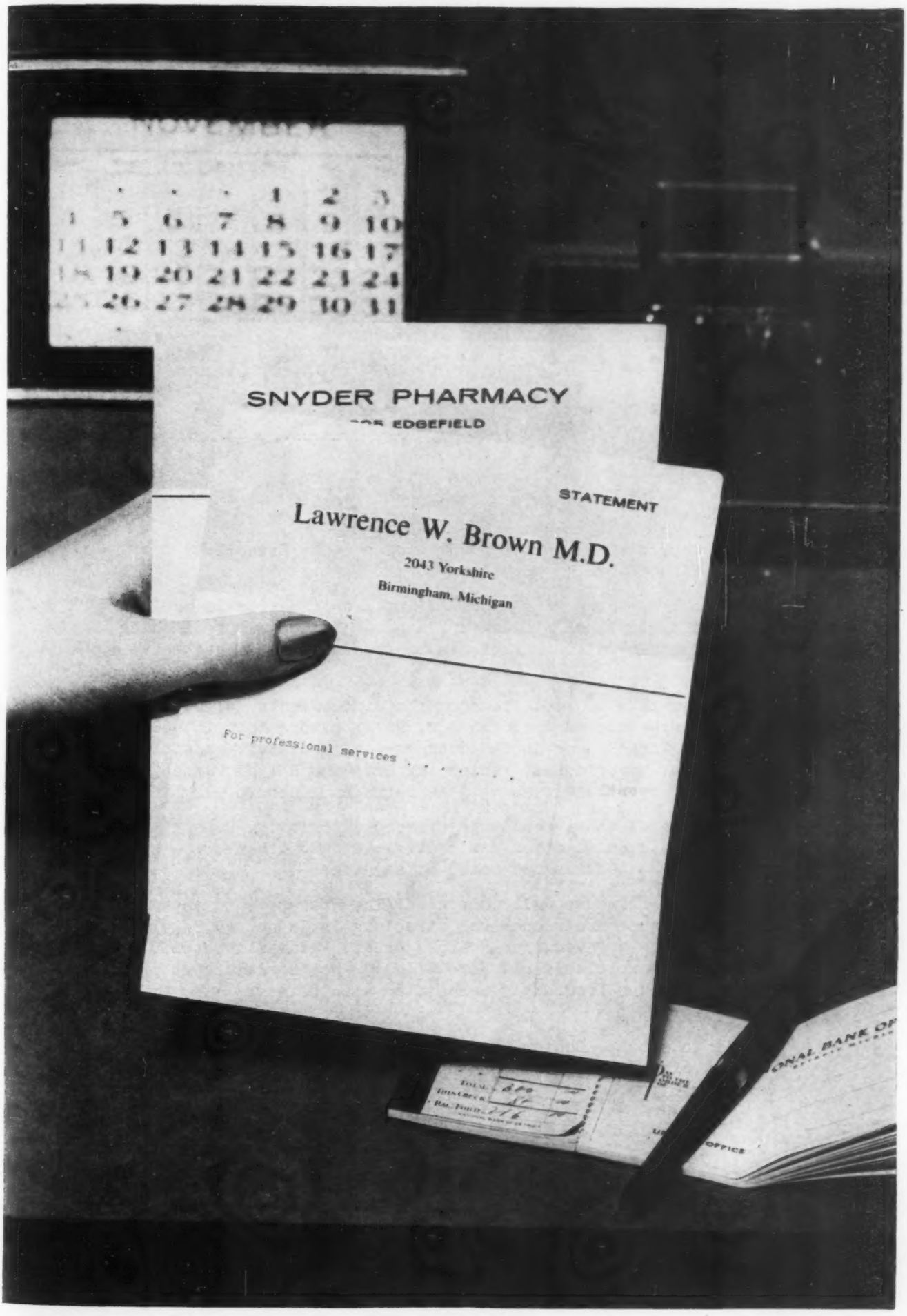
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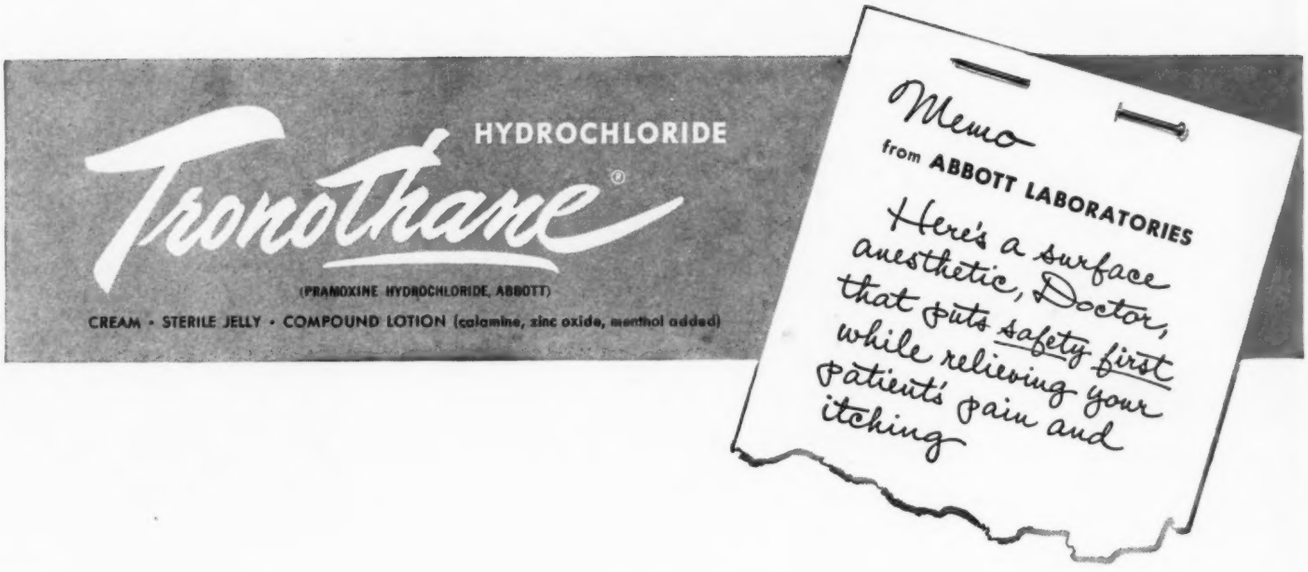
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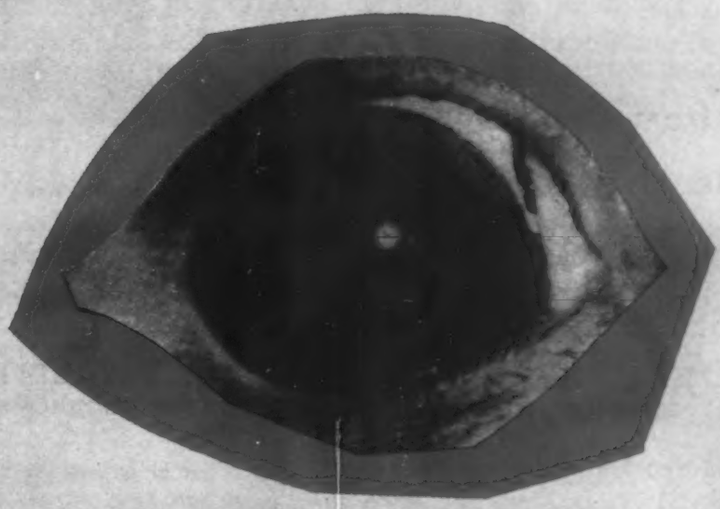

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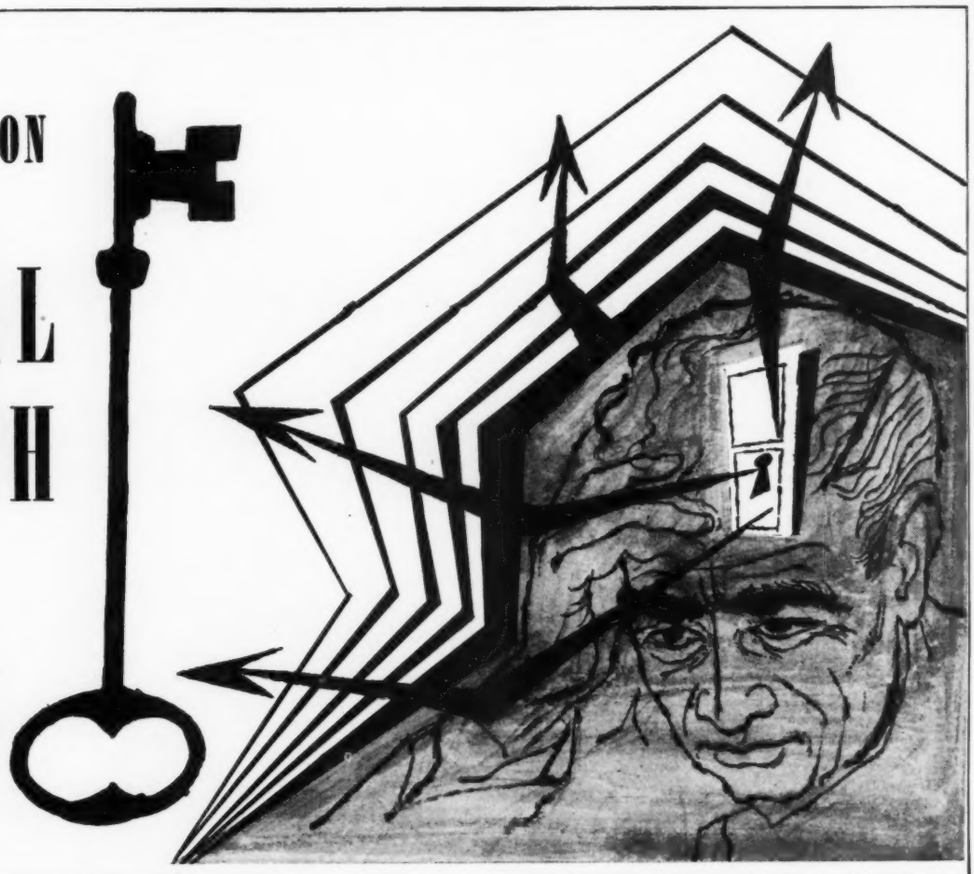

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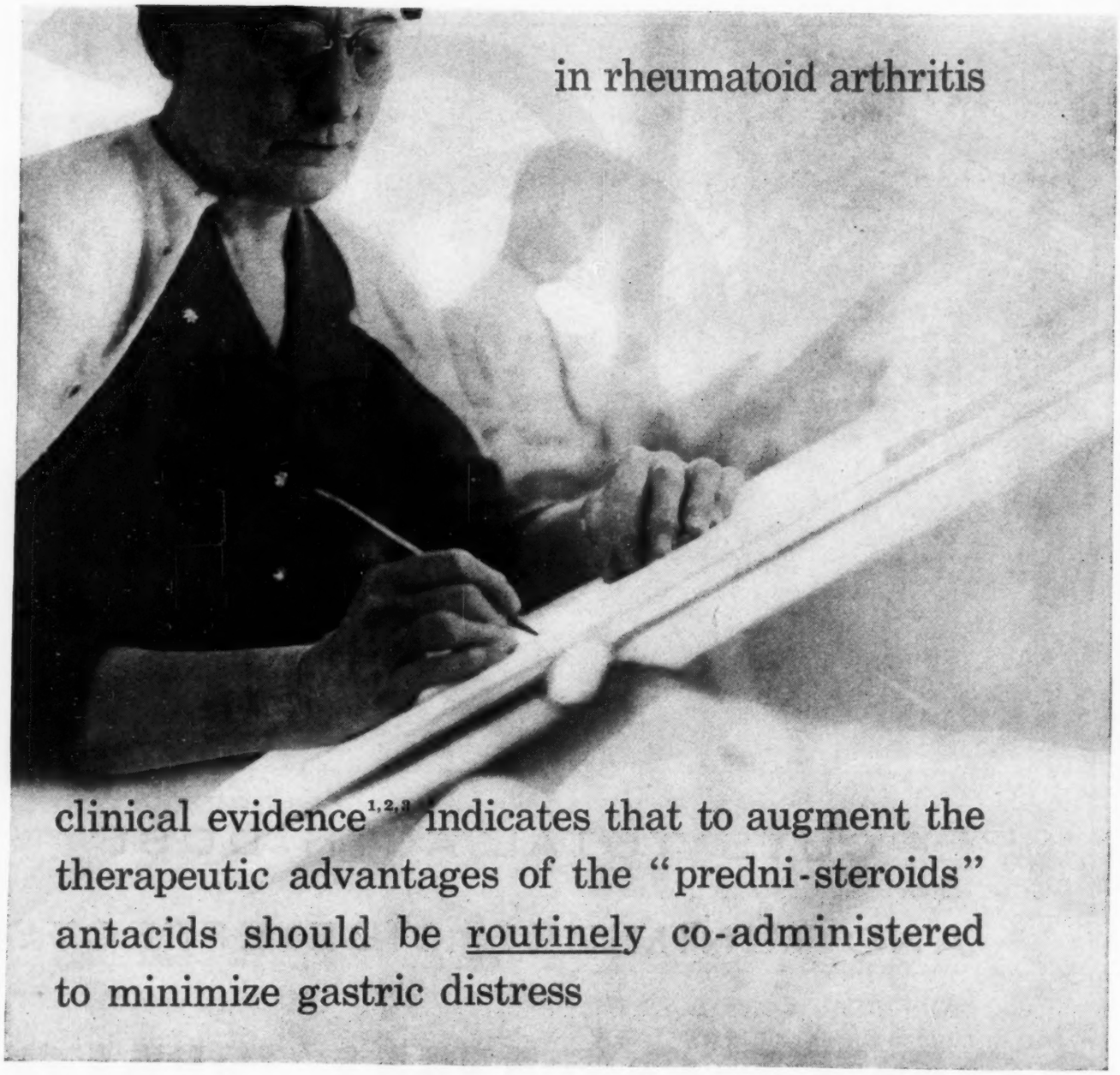

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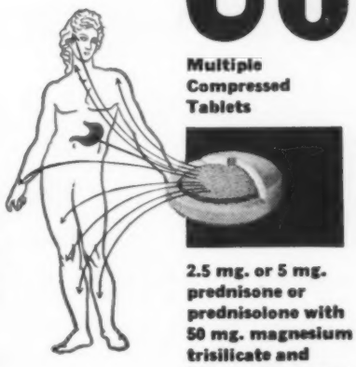

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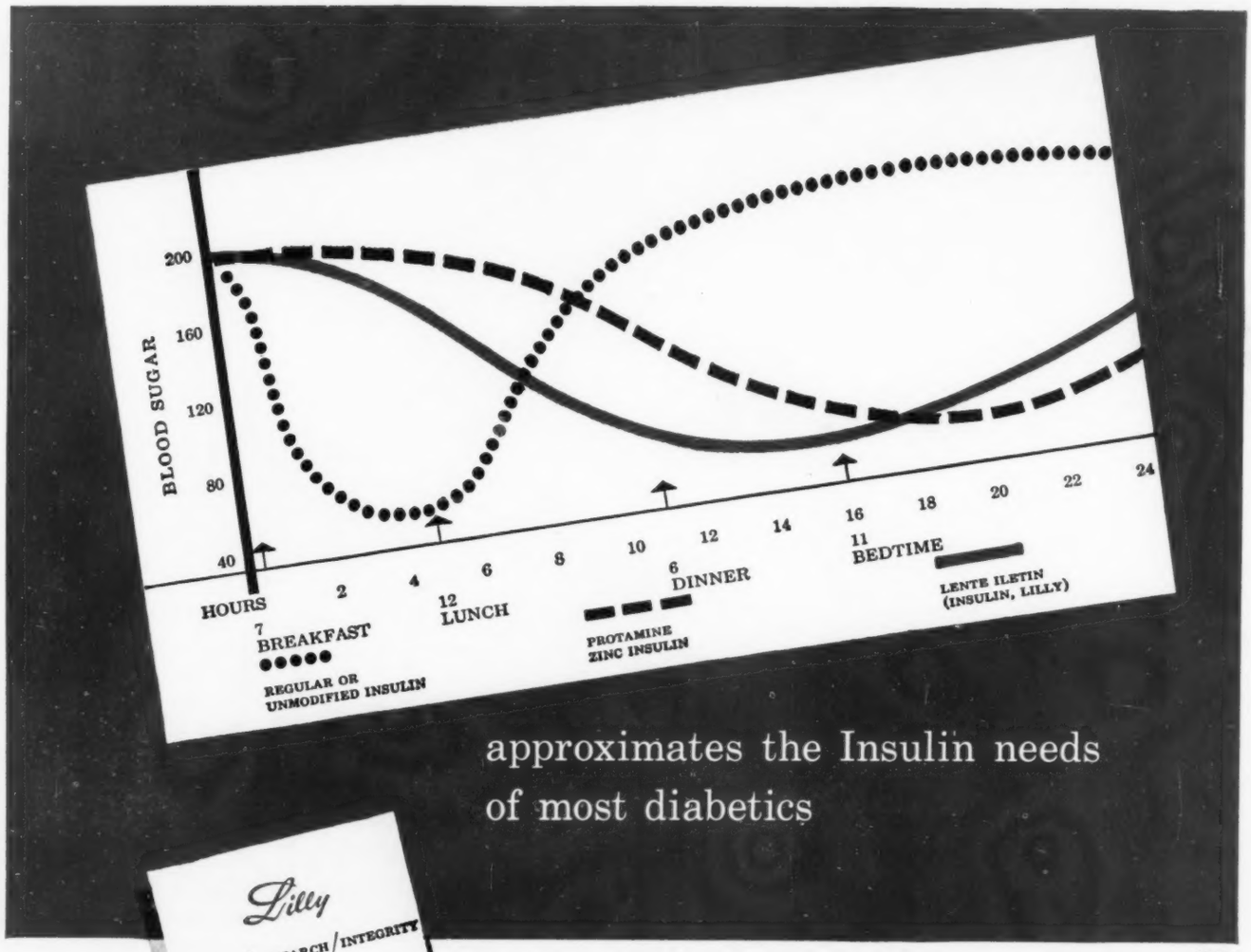

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THE OLYMPIC GAMES AND THE OLYMPIC IDEAL

Allan J. Ryan, M.D., Meriden, Conn.

• *The Olympic Games are of such a personal nature to the world that they can even override serious political differences between countries. Here is presented how athletic training, the forerunner of the games, had its beginning. In considering the trials and tribulations that befell the growth of gymnastic exercise, it will be seen that physicians are involved not only in the etiology but almost as equally as competitors in the actual contests. New organizations, such as the American College of Sports Medicine, assure greater participation by the medical profession in future athletic affairs.*

This year more than 70 nations will send representatives to Melbourne, Australia, to compete between Nov. 22 and Dec. 8 in the 11th Olympiad. Competition has already been completed in the seventh Winter Games at Cortina, Italy, and in the equestrian events held in June in Sweden, because of the six-month quarantine on horses required by Australia. Sixty-nine nations, a record number, sent competitors to Helsinki, Finland, in 1952. What is the nature of these contests, which draw the attention and participation of men and women from all over the world every four years and which can override serious and fundamental political differences to the extent that East and West Germany can unite to send a single team? How are they related to the ancient Olympic Games of Greece, and what is their sponsorship? Why should physicians be interested in these demonstrations of skill, strength, agility, and endurance?

Probably the most ancient of all sports is hunting. Although we have pictorial records of the practice of this activity from the ancient Egyptian and various Asiatic nations and fragmentary records of other competitive activities, we do not consider that these people looked upon these endeavors as sport in the modern sense. The early Irish tribes held their Tailtean games in the pre-Christian era, but our knowledge of this time is so obscured by mythology that we do not have a clear idea of these contests. The ancient series of Olympic Games held on the plains of Olympia in Greece are well documented from the year 776 B.C. until they were abolished by the Emperor Theodosius in 394 A.D. These games, therefore, for practical purposes, mark the beginning of the recorded history of athletics.

We do not know the exact reason for the introduction of the competitive foot race, which marked the first Olympic contest, into the religious festivals that had been celebrated on these plains probably for hundreds of years before that. We do know that, although the games were originated by the Eleans who were the inhabitants of that region, they soon shared control of the games with the Spartans, even when these two states were at war. During such times a "truce of the gods" was zealously observed for the period of the games. We should also realize that, during their thousand-year history, these games bequeathed to us not only a series of contests, many of which are practiced and enjoyed today, but also the ideal of amateurism in athletics, which is the basis of the widespread interest and participation in sports today. In fact, the games were eventually abolished, because they had become so corrupted by the gradual inroads of professionalism that they had lost their true character and inspirational force. The first recorded Olympic game consisted of a single contest, a foot race the length of the stadium, which we know was about 200 yd. long. It was won by Coroebus, who was by profession a cook. A monopoly of victories by the hosts was maintained until the 13th Olympic Games, when the first non-Elean was returned a victor. At the 14th games, a second race, twice the length of the stadium, was added, and at the 15th a still longer race. The 18th Olympics saw the introduction of the pentathlon, due to the influence of the Spartans. This was at first an elimination contest in which the competitors were gradually narrowed down as they progressed through the broad jump, javelin throw, foot race, and discus throw. The two best then wrestled for the championship.

Boxing was added to the program at the 23rd games, the four-horse chariot race at the 25th, and the pancratium (a very rough combination of boxing and wrestling) at the 33rd games. Gradually contests in art, sculpture, and music were also added. In fact, the term athlete originally applied to one who competed

for a prize in the games, whether in musical, gymnastic, equestrian, or other competition. By the 77th Olympiad, the games lasted for five days and included two lengthy religious ceremonies. For the first time representatives of all countries bordering on the Mediterranean were invited. It was indicative of the international character of the games that the final victor at the last games in 394 A.D. was Varastad, an Armenian.

History of Athletic Training

Those who competed at the Olympic Games were expected to spend 10 months in hard preliminary training. As the number of events increased and competition became wider and keener, those without a considerable or independent income found it hard to devote the necessary time to training. At the site of the games, training table meals were provided. Fried and boiled foods and cold drinks were forbidden. Cheese, figs, and wheat bread were staples of the training diet. Most of the competitors abstained totally from wine during training periods. Only light conversation was permitted at meal times to encourage proper digestion. Women were never allowed to compete, and at first were not even allowed to witness the games. This prohibition was eventually disregarded after a mother came disguised as a man to see her son compete. The prescribed penalty of being hurled from a high rock was not invoked in her case, and thereafter women were gradually admitted as spectators. There was an upper age limit of 35 for all contestants. In later games, separate contests for boys and youths were arranged. All athletes competed without clothing and their bodies were salved with oil. This practice probably had more of a ritual than a practical significance, although it must have made the wrestling contests difficult.

Professional athletics, which was to prove the downfall of the games eventually, began in Greece about the fifth century B.C. During the early Roman empire, amateur athletes were virtually unknown. Moreover, professional athletes finally supplanted the gladiators, who were principally prisoners or slaves, in the public circuses. The professionals were mostly Greeks and were organized in guilds. The ancient philosophers and physicians were unanimous in condemning the profession of athletics as injurious to the mind and body.

In medieval times the nobility found their exercise in training themselves in the strenuous art of war, which involved principally hand-to-hand combat on foot or horseback. They practiced hunting for diversion as well as to supply the larder. The common people had their own games, such as throwing the stone, a type of football, and quarter-staff. Gymnastics survived principally in the families of professional acrobats who entertained the nobility. Edward III of England prohibited weight-throwing by statute, but Henry VIII tossed the heavy pole, threw the hammer, and pole-vaulted. He also excelled at the game that eventually became court tennis, which was played first in the dry moats of the French castles.

Italian physicians of the Renaissance revived interest in gymnastic exercise for therapeutic purposes. Little general attention was paid to this subject, however, until the early 19th century. F. L. Jahn, a Prussian, devised a series of exercises for his Turnhalle gymnasium with the specific object of fitting German youth to rise above Napoleonic domination. The battles of Leipzig and Waterloo came too soon after he had begun this self-imposed mission, however, for his work to have had much influence. In Sweden, Per Henrik Ling (1776-1839) added to and modified the classical exercises to produce the routine that we know as Swedish gymnastics today. Gymnastics was first taught in America in 1825 by Charles Follen and Charles Beck, who were pupils of Jahn. Dio Lewis created a vogue for light exercise with rings, dumbbells, and bar bells between 1860 and 1870. In 1879 the Hemenway gymnasium opened at Harvard with Dudley Sargent's apparatus, and in 1889 Nils Posse introduced the Swedish system of gymnastics to this country and the Boston Normal School of Gymnastics was founded. The integration of gymnastics into the educational program was signalized by the first appearance of the term "physical education" in 1880. The International Gymnastic Federation with representation from Europe and the United States was founded in 1881, but it was not until 1923 that a complementary federation of educative gymnastics was organized. This may have been due to the fact that in France and Germany physical training by gymnastics remained under state control.

Rebirth of Olympic Games

During the 19th century, regularly scheduled athletic and gymnastic meetings began to appear. The German Turnvereine derived from the Turnhalle gymnasium of Jahn. The first regularly organized athletic meeting of modern times in England was held at the Royal Military Academy in Woolrich in 1849. Organized meetings and the growth of athletic clubs called for larger federations to regulate them. The Amateur Athletic Union was formed in the United States in 1888, eventually creating order out of chaos. This association established the pattern for the modern Olympic organization.

The man who was responsible for the modern revival of the Olympic Games in 1896, Pierre de Coubertin of France, was not an athlete himself and had no particular interest in the effect of athletics on the development of physique. He conceived of the idea of the games as a revolution in education that would employ sport as a medium. As a young man he had pondered the question as to why the small island of England could produce leaders who could and did dominate such a large area of the world, producing such tremendous wealth and influence for the mother country. He thought that he found the answer in the English public school system, which recreated the adult world in miniature with its own class system, the struggles and injustices, and the great emphasis on athletics as part of the curriculum. If only, he thought, every country in the world could have the incentive to train its youth in the keen struggle of international athletic competition, the same success might result in the development of their characters. Perhaps we might call this a sort of preventive psychosomatic medicine.

Many have since argued that the games should be discontinued because the disputes with which they are frequently marred are not conducive to international amity. It was never the intention of the founder that they should be. In London over 40 years ago Coubertin made the following statement after a particularly violent series of incidents in the 1908 Olympic Games:

> Heaven preserve us from a society in which there are no excesses and where any expression of impassioned feeling must be kept imprisoned within the narrow confines of convention . . . . When I think of the attacks without number to which [the International Olympic Committee] has been subjected—the ambuscades, the unbelievable conspiracies, the mad jealousies. . . . I thrill to the realization that this sort of wrestling is great sport, even when our adversaries disregard the niceties of the classic techniques and go in for catch-as-catch-can methods. The important thing in life is not the victory, but the struggle; the essential thing is not to have conquered but to have fought well. To spread these precepts is to develop a more valiant, more strong, more scrupulous and more generous humanity.

The leading amateur athletic governing bodies from each country that had them were invited to send representatives to form the new Olympic organization. Many difficulties lay or were placed in the way of its success, but the doughty founder persisted and within three years the first Olympiad of the new series was held at Athens in 1896 with nine countries sending contestants. Under the new rules there was to be no age limit for competitors. The following events must be included in every Olympic competition: athletics (which by now had come to mean what we refer to in the United States as track and field and cross-country), gymnastics, boxing, fencing, shooting, wrestling, rowing, swimming, equestrian events, the modern pentathlon (running, riding, shooting, swimming, and fencing), cycling, weight-lifting, yachting, and competition in the fine arts (music, literature, art, sculpture, and architecture). Optional events have included soccer football, Rugby, polo, water polo, field hockey, handball, basketball, canoeing, and gliding. Other events such as tennis and archery have been included as demonstrations and then discontinued. In order to be eligible for inclusion in the Olympic program a sport must be practiced in at least 10 different countries, and at least 6 countries must indicate that they will enter contestants. Women appeared for the first time as competitors in swimming and diving events at Stockholm in 1912.

It is to be noted that the games are awarded by the Olympic Committee not to countries, but to individual cities. The second games were held in Paris, France, in 1900; the third in 1904 at St. Louis; 1906 at Athens, Greece, (a two-year interpolation not regarded as entirely official); 1908 at London, England; and 1912 at Stockholm, Sweden. War prevented holding of the games in 1916, but in a remarkable recovery Antwerp, Belgium, staged the games in 1920 to resume the series. Subsequent games were held at Paris in 1924; Amsterdam, Holland, in 1928; Los Angeles in 1932; and Berlin, Germany, in 1936. This time war interrupted the series for 12 years until London, in an unusual demonstration of courage and organizing ability, staged the games in 1948. Helsinki, Finland, carried on in 1952; this year the games go to Melbourne, Australia, and in 1960 will return to Europe to be held in Rome, Italy. A series of games to include only winter sports was inaugurated at Chamonix, France, in 1924 and has since been held at St. Moritz, Switzerland, in 1928; Lake Placid, N. Y., in 1932; Garmisch-Partenkirchen, Germany, in 1936; St. Moritz in 1948; Oslo, Norway, in 1952; and Cortina, Italy, in 1956. In 1960 the winter games will be held in Squaw Valley, Calif. Events that are currently part of the winter program are bobsledding (two-man and four-man), figure skating for men and women (individual and pairs), cross-country skiing (10 km. and 15 km. relay for women; 15, 30, 40, and 50 km. relay for men), downhill slalom and giant slalom skiing for men and women, ski jumping and Nordic combined (jumping and downhill skiing) for men only, speed skating (500, 1,500, 5,000 and 10,000 m. for men), and ice hockey.

At the early Greek games the winner was awarded a laurel wreath. Today he gets a gold medal. Silver and bronze medals are given for second and third places and certificates for fourth, fifth, and sixth places. Four hundred eighty-four competitors appeared at Athens in 1896 and most of them paid their own way. By the time of the games in Amsterdam in 1928, this number had increased to almost 4,000. Although only 1,700 contestants made the trip to Los Angeles in 1932, it was there that the construction of an Olympic village, especially built to house them, was introduced. This has now fortunately become a regular part of the program, since about 6,000 entered for the games in London in 1948 and more may be expected in Rome in 1960.

The fact that the games have maintained their amateur standing is best indicated by the disputes concerning professionalism that have arisen before and after each games. These disputes, although celebrated, are remarkable by being so few in number, indicating the strong hand that has been held by the Olympic Committee under the presidency of Baron de Coubertin and his successors. Americans will best remember the charges against the famous American Indian athlete, Jim Thorpe, who had startled the world by his remarkable performance in winning the decathlon at Stockholm in 1912. He had to return his medals and certificates, and his records were erased from the books. For some reason, long distance runners have been frequently involved in these disputes, and this year's case of Wes Santee serves to recall similar difficulties involving Paavo Nurmi of Finland and Jules Ladoumegue of France.

The current discussion as to whether the Russian teams should be considered professional, because they are subsidized by the state and because special considerations are given to athletes in training, has somehow missed the point, as Avery Brundage has pointed out. The International Olympic Committee has been preaching for 60 years the value of national programs of physical education and sports. The Russians are almost the only ones who have taken it seriously. Their athletes made such an outstanding showing in the Winter Olympic Games because as individuals they had trained hard and had entered their events in fine physical condition. The Olympic competition is an individual, not a national, matter.

Although there are team events in the various sports, there is no over-all team prize for the most events won or points scored by any particular country. The so-called unofficial point score for all events is strictly a product of newspaper manufacture, and the fact that the United States has more than once been adjudged the "victor" in this fashion is of absolutely no significance. All victories or outstanding performances are individual, no matter how much they may inflate national pride. No longer do we breach the walls of the city to receive home the Olympic victor as was once done in ancient Greece. Other honors are readily forthcoming, however, and the financial reward for the one who wishes to turn professional later may be, as in the case of some past skating champions, considerable.

U. S. Contributions

The United States has made some interesting and some outstanding contributions to the history of the modern games, among them the first winner to the modern series of Olympic games, who is still alive and active today at 87. He is James B. Connolly of Boston, who left Harvard and went with 11 other representatives from this country to win the hop, step, and jump championship at Athens in 1896. No other athlete has ever equaled the accomplishment of Ray C. Ewry of this country, who in four Olympic Games (1900, 1904, 1906, 1908) captured 10 gold medals in the standing high jump, broad jump, and hop, step, and jump events, which have since been discontinued. The outstanding individual performance recorded in the track and field events of one Olympic Games was turned in by Jesse Owens of the United States at Berlin in 1936, when he won gold medals in four events, the 100-m. and 200-m. dashes, 400-m. relay, and broad jump. His performance in each instance tied or broke or aided in breaking the Olympic record. These records have not since been exceeded in Olympic competition. No other athlete has ever exceeded his distance in the broad jump (26 ft. 5 5/16 in.) at any time except himself (26 ft. 8¼ in.). Bob Mathias is the only man ever to win the decathlon twice in the Olympic games (1948, 1952). In so doing he set a new record for points scored under the new system in his second try.

The current president of the International Olympic Committee is the first man from the United States elected to this important office. He is Avery Brundage, a formidable athlete in his own day, although never an Olympic victor, since he achieved his peak performances during World War I when no games were held. He won the United States all-around track championship in 1914, 1916, and 1918. This achievement is best measured by considering that this series of events required as much, if not more, skill and endurance than the Olympic decathlon and that they were all contested in one day rather than two days, as is the case in the decathlon.

Doctors and the Olympics

Physicians, both as graduates and as medical students, have won their share of victories at the Olympic Games. Probably the first to win the gold medal as a physician was G. E. Sheldon of the United States, who was springboard diving champion in 1904. An even more famous Olympic diving champion is Sammy Lee, an ophthalmologist in the U. S. Army Medical Corps, who won the high platform diving championship in 1948 and 1952. Also in the field of swimming, George Kojac of the United States, competing in the 1928 Olympics as a medical student, won the 100-m. backstroke, swam on the 800-m. relay team, and took fourth place in the 100-m. free style swim. In 1908 at London, J. R. Calkins of the United States was a member of the team that won the revolver and pistol-shooting titles at 50 and 100 yd. In 1932 at Los Angeles, John R. Huffman took sixth place in the saber event, an outstanding achievement in a sport so dominated by the Europeans. In 1952 Britton Chance of Philadelphia sailed his 5.5-m. yacht to victory at Helsinki.

Oddly enough, in track and field events, where one would least expect to see physicians or medical students as competitors because of the enormous amount of practice required, they have achieved some noteworthy performances. Paul Martin of Switzerland took second place in a thrilling 800-m. race at Paris in 1924 while he was a medical student. Patrick O'Callahan, now of Roseville, Ireland, won the Olympic hammer throw in 1928 and 1932. In 1936 John Lovelock of New Zealand, who was also holder of the world's outdoor records at one mile and 1,500 m., won the 1,500-m. race at Berlin. In 1948, Arthur Wint, a medical student from Jamaica, British West Indies, won the Olympic 400-m. crown.

As medical training and practice become more complex and demanding of time, we can expect to see fewer names of physicians as competitors and many less as victors in the Olympic Games. At the same time, the growing interest in the relationship between medical and physiological problems and athletic performances, which has led to the establishment of the International Federation for Sports Medicine, British Medical Sports Association, and the American College of Sports Medicine, assures us that there will be increasing participation of physicians as coaches, trainers, advisors and observers. Such distinguished sports buffs as Adolphe Abrams, medical advisor to Great Britain's Olympic teams for many years, may expect to be joined by many others who contribute their skill and knowledge as well as their enthusiasm to these international programs.

Even those physicians who have mental reserves about the medical value of sports, particularly athletics, may wish to ponder the effect in safeguarding mental health that might be produced if they could succeed in inculcating the qualities that at least one writer feels that they are capable of promoting:

> Loyalty that excludes taking refuge in subterfuges, docility and obedience to the wise commands of the director charged with the training of the team, the spirit of self-renunciation when one has to fade into the background in order that the interests of the team may thereby be furthered, fidelity to obligations undertaken, modesty in victory, sereness in adverse fortune, patience toward spectators who are not always moderate, justice if the competitive sport is bound up with financial interests resultant from voluntary agreements, and, in general, chastity and temperance already recomended by the ancients themselves.

These and other remarks were addressed to the Italian Sports Federation on the 10th anniversary of its revival last year by Pope Pius XII, who was an enthusiastic and skillful rider and swimmer as a young man and who was responsible for the installation of a gymnasium at the Vatican. Substance has already been lent to these words by the sportsman-like conduct of the many Olympic competitors from all over the world and their subsequent records as good citizens as well as good sportsmen. This year has already seen the great mile champion, John Landy of Australia, stop in the middle of an Olympic trial race to help a fallen competitor at the risk of losing his own place on the team. No one who was present at the opening of the Olympic Games in Helsinki in 1952 could ever forget the tremendous inspiration of that moment when the carefully guarded secret of the identity of the runner to bring the Olympic torch into the stadium was revealed. The incomparable Paavo Nurmi appeared in running clothes and circled the track before lighting the fire, while the huge crowd rose as one with a mighty roar of pride in this man who had so well exemplified their athletic ideal to the world in previous Olympic contests.

The interest and affection in which the Olympic games are held by such a great number of the world's people, and the strength that has enabled them to overcome the jealousies, bickering, and unfortunate occurrences that at first almost prevented their rebirth and later have at times marked their growth, is best epitomized in the Olympic Oath taken by all competitors at the start of the games. If all of our interest and activities in sports from the very beginning had produced nothing more than the desire to implement this oath, then it would have all been worthwhile. "We swear that we will take part in the Olympic Games in loyal competition, respecting the regulations which govern them and desirous of participating in them in the true spirit of sportsmanship for the honor of our country and for the glory of sport."

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THE INTERNATIONAL FEDERATION FOR SPORTS MEDICINE

Giuseppe La Cava, Rome, Italy

• *The Fédération Internationale Médico-Sportive (FIMS) first convened in 1928, when 33 physicians from 11 countries met in connection with the Winter Olympic Games. The organization has continued in spite of interruption by World War II. Its purpose has been to inaugurate relevant scientific research, to promote the study of medical problems encountered in sports and physical exercise, and to organize international congresses to be held simultaneously with the Olympic Games. The 11th International Congress was held this year in Luxembourg. The list of topics discussed in the past includes such problems as standard charts for examination and evaluation of athletes, tests of physical fitness, medical guidance in physical exercise, therapeutic exercise, orthopedics and traumatism, evaluation of physical education training, women in sports, and young people in competitive athletics. The FIMS has also been able to help with the organization of occasional scientific meetings and national conventions when help was needed by the organizing committees in various countries. In 1954 there were 23 national associations concerned with the diffusion of the concept of medicine related to sports.*

Physicians of different nations, guided by a common goal, that sports were to be a means of improving the health of mankind as a whole, met for discussion and soon formulated the idea of establishing a unique organization. Thus, the first medical congress dedicated to sports took place in March, 1915, in Paris. The topics it treated were the physiology of physical exercises and kinesitherapy. However, this good start was interrupted by World War I, which put an end to peaceful international relations. After World War I, when the Olympic Games were reestablished and the scope of their organization was enlarged, the sports physicians no longer limited their activity to the treatment of sick athletes and to emergency calls but began to engage in scientific reasearch and systematic tests on the finest champions of the world.

Organization and Purposes of Federation

On Feb. 14, 1928, at the time of the ninth Olympic Games, the first step in the founding of the Fédération Internationale Médico-Sportive (FIMS) was taken. On this occasion, in St. Moritz, Switzerland, where the Winter Olympic Games were being held, the first meeting of physicians took place; 33 physicians of 11 different nations participated. W. Knoll (Switzerland) was elected president; A. Mallwitz (Germany) secretary general; and F. J. J. Buytendijk (Holland), W. Dybowski (Poland), and Latarjet (France) members. Buytendijk was put in charge of the organization of the first International Congress on Sports Medicine, scheduled to take place in Amsterdam, the Netherlands, during the Summer Olympic Games in the month of August of the same year. The congress met with great success; 281 physicians and specialists in physical education, representing 20 different nations, were present. The first constitution of the Association Internationale Médico-Sportive (AIMS) was approved. Buytendijk was elected president. The constitution of the association contained the following purposes: (1) to inaugurate scientific research on biology, psychology, and sociology in their relation to sports; (2) to promote the study of medical problems encountered in physical exercises and in sports, to be done in collaboration with various sports federa-

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tions and organizations; and (3) to organize international congresses to be held simultaneously with the Olympic Games.

In October, 1930, the committee of the association, meeting at Vienna, Austria, chose Brown of New York to take charge of the second congress. The congress was scheduled for the time of the 10th Olympic Games, which were to be held in Los Angeles in 1932. This congress, however, did not take place, because the American physicians did not participate in the program planned by their European colleagues. The second convention, therefore, did not take place until September, 1933, when it was held at Turin, Italy. In the meantime Buytendijk had resigned, and Latarjet of Lyons, France, had been elected president. The topics to be discussed were divided according to subjects and grouped under nine headings, including anthropology and charts for evaluating physical fitness, organization of physical directors of different nations, kidneys and sports, respiration, fatigue, orthopedics and traumatism, and women and sports. It was on this occasion that an international association, with Latarjet as president, can be considered to have been duly established; the second article of the constitution was changed and the name of the association was changed to Fédération Internationale Médico-Sportive et Scientifique. It was also established that the general assembly was to meet every four years when the congresses were held. Congresses were to be organized at the time of the Olympic Games. Later this interval of four years was recognized as being too long.

For this reason French doctors interested in sports organized at Chamonix, France, in September, 1934, the third International Congress on Sports Medicine; eight different nations were represented. The following topics were discussed: issuance of a standard chart for medical evaluation of physical fitness, medical control of physical education and of sports, medical guidance in physical exercises, and sports engaged in at high altitudes.

At the same time the *International Bulletin* was established and new proposals were advanced, for instance, the teaching of physical education in all medical schools, with practical and theoretical lessons and final examinations; the awarding of a special diploma to those passing these examinations, enabling them to obtain positions such as those of hygienist and school doctor; the institution of a national and international licensing system for athletes with the approval of the associations for sports medicine of various countries (without such a license, the athletes were not to be allowed to participate in any international contest); and the standardization of medical diagnostic forms (minimal and maximal). Other changes were made in the constitution. The word scientific was eliminated from the name of the federation; article 11 of the constitution provided that the federation must meet at the same time and collaborate with the section on hygiene of the League of Nations.

The fourth International Congress on Sports Medicine was held during the 11th Olympic Games in 1936 in Berlin, Germany; 1,500 physicians of 40 nations met July 28 to 31. The topics, divided under nine headings and discussed in six different meetings, were metabolism and circulation; circulation and respiration; metabolism, training, and hygiene; psychology in sports; aviation medicine; medicine of physical education; traumatology and medical gymnastics, biometrics; and biological and social medicine.

The following year the French again organized an international congress, the fifth, which was held July 11-17, 1937. The topics discussed were divided into four categories: biology and sports, scholastic and postscholastic education, orientation in sports, and accidents in sports. At this congress, Latarjet and Knoll were elected honorary presidents, Conti (Germany) was elected president, Ugo Cassinis (Italy) secretary, and Albert Govaerts (Belgium) treasurer. The last convention prior to World War II was held in Brussels, Belgium, on July 9-12, 1939. The principal topic of discussion was biology applied to physical education and to sports; at this congress the number of the members of the committee was increased with the election of Paul A. Chailley-Bert (France), Hermann Brandt (Switzerland), Biezius (Lithuania), Plasch(Belgium), Dybowski (Poland), Emerich Szukovathy (Hungary), and Jiri Kral (Czechoslovakia). The organization of the seventh International Congress, which was supposed to take place in 1940 in Finland, was entrusted to Simo Antero Brofeldt of Helsinki. This congress never took place, because in the meantime World War II had begun.

Postwar Changes

After the war, Govaerts of Brussels, Belgium, the last vice-president of the federation, acting in accordance with the rules and regulations of the constitution approved in 1939, took the initiative and entrusted Kral of Prague, Czechoslovakia, with the duties of secretary general. The members of the committee, Chailley-Bert, Louis Merklen, Kral, B. A. McSwiney and Brandt, consented to a democratic reorganization of the federation. The new constitution was approved by the general assembly, which gathered in Brussels on June 21, 1947.

The seventh International Congress was held in Prague in 1948. At that time the wounds of the war were still open and bleeding. The spirits of all Europeans were still shaken; Europe itself was slowly recovering from the ruins of the war. Slowly the federation picked up, one after another, the threads of its web, which had been torn apart by the war. The congresses, which since that time have taken place successfully every two years, have become the foundation stones on which the magnificent edifice of modern sports medicine is developing. The eighth International Congress met in Montecatini, Florence, Italy, in 1950. It established the structural foundations of the new organization, giving it that democratic and universal spirit that has stimulated and determined the formation of many national associations for sports medicine. At this Congress the following topics were treated: physical education training and its evaluation, sports competition among young people, and reeducation of "traumatized" athletes. Govaerts was reelected president and I was elected secretary general. The

ninth Congress took place at the Sorbonne in Paris, France, May 30-June 1, 1952; it demonstrated the high scientific level of the work and studies that had been carried on. The topics of the congress were surgical and nonsurgical treatment of traumatic lesions of the knee (fractures excluded) and the general syndrome of adaptation in sport activities.

The 10th International Congress in Belgrade, Yugoslavia, in 1954, in which a large number of legally represented national associations participated, gave proof of the solidarity so far attained by the federation. The topics treated were sport in mature age and sport and physical rehabilitation.

The 11th International Congress, which recently took place in Luxembourg on May 30-June 1, again confirmed the fundamentally scientific and moral aspect of the branch of medicine that deals with sports. Sports medicine, as a discipline, has gained autonomy among the medical and biological sciences. At this last congress, the following topics were discussed: lesions of the muscles and of the tendons and standardization of the cardiofunctional tests in sports.

At present the executive committee of the federation is composed of Chailley-Bert (Paris), honorary president; A Govaerts (Belgium), president; G. La Cava (Rome), executive secretary; Kral (Prague) vice-president; Tegner (London), vice-president; Jones (Luxembourg), treasurer; and Kriatchko (U.S.S.R.), Koch (Germany), Prokop (Austria), and Smodlaka (Yugoslavia), members.

Recent Activities

In recent years the activities of the federation have followed two essential directions. The first is concerned with the progress of the studies made by that branch of medicine that is related to sports. The federation has sponsored scientific meetings and national conventions; it has encouraged worthwhile undertakings and has given help for their successful realization whenever this was needed by the organizing committees. We must remember, among other meetings of international character, the successful Argentine Congress for Sports Medicine, which took place in Buenos Aires; the symposium held in Berne, Switzerland, on the occasion of the European athletic contests; the congresses of the German Association for Sports Medicine held at Edenkoben, Augsburg, and Freudenstadt; the scientific meetings of the British Association for Sports Medicine; the courses on sports medicine held in different nations, as in Austria, Yugoslavia, and Switzerland; the national Italian congresses of Trieste and Perugia; the international meetings of Turin, Italy, on the occasion of the European swimming championship; of Cortina, Italy, on the occasion of the seventh Winter Olympic Games; and of Sestriere, Italy, dedicated to winter sports; the meetings of the Commission on Sports Pedagogy of the European Center for Culture in Geneva, Switzerland; and the convention on sports medicine organized by the Ministry of Physical Education and Sports of Luxembourg.

The initiative of the Italian Federation for Sports Medicine is also to be pointed out. This federation publishes every two years an international bibliography that brings together everything in the field of sports medicine that is published in the world. The same can be said also for the journal *Medicinea Sportiva*, which each month publishes the international federation's *International Bulletin*. This journal, together with many other specialized publications dealing with medicine relating to sports—French, German, Belgian, Yugoslavian, and Argentine—keeps alive in the members of the federation the spark that kindles the fire of scientific and clinical research and works for the solution of the important moral, social, and educational problems connected with the development of sports in the modern world.

The second is concerned with the diffusion of the concept of medicine related to sports and with the propaganda for the establishment of national associations in different countries. The results have been very good. While in 1950 in Montecatini there were only 6 such regular associations, in 1952 the number went up to 13 and in 1954 to 23, and with the recent admission of Australia, Bulgaria, Chile, and Rumania and the eventual admission of Canada, Poland, and Hungary, the number of national associations will go up to 30. This undoubtedly makes for success, yet it is not to be considered as a point of arrival but rather as a stage in the establishment of national associations in all countries where sports and physical education are practiced.

The task of spreading the concept of sports medicine was greatly helped by the official recognition of the federation received in Oslo, Norway, in 1952 from the International Committee on Olympic Games. The high prestige of the committee was especially stimulating and helpful to the efforts of the federation in establishing relations among international sports federations. A very detailed program along these lines was recently proposed by the general assembly of the federation on the occasion of the 11th International Congress in Luxembourg; its fundamental points are (1) participation of a medical representation or a medical commission in each international sports federation and (2) the establishment of a technical committee in the FIMS composed of the abovementioned medical representatives for the coordination of the sports and medical activities. A direct liaison between sports federations and the international federation would thus be feasible through the most qualified representatives. The federation could accomplish its duty as a unique specific consultative body in the field of sports medicine recognized by the International Olympic Committee. This general program has been outlined by the president of the committee, Avery Brundage, whom we thank for the interest and good will with which he follows our work. The good results that have already been obtained by some federations like the International Association of Amateur Boxing and the efforts made by other associations (of athletics in general and of swimming) hold out hope for the definitive completion of this program and for the realization of those objective ideals that modern sports medicine has encouraged by its spontaneous, vital initiative.

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A MEDICAL HISTORY OF GYMNASTICS

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• *The medical profession has always been interested in exercise, not only for recreation and as an aid to physical development but also as a prevention against disease. This article introduces a modified symposium on athletics both as sport and for the furtherment of health.*

The history of physical exercise, especially when reviewed in a medical vein, reveals the logic behind gymnastics as part of the curriculum to strengthen the entire body. Much of physical exercise as we know it today has been, and still is, formulated by the physician, on the basis of sound medical principles.

The history of man's interest in voluntary coordinated exercise of all sorts from the most ancient recorded history to modern times is embodied in the study of the origin and development of gymnastics. This word of Greek origin derives from the circumstance that the competitors exercised naked. Hence, their place of exercise became the gymnasium, a public building, as opposed to the palaestra, a private school where boys were trained in physical exercise. An athlete in ancient Greece was originally one who contended for a prize in the Olympic Games, whether in musical, gymnastic, equestrian, or other competition. Later, only those who competed in the gymnastic contests were designated athletes. The story of the development of gymnastics is also the story of the interest of doctors of medicine in exercises designed not only for recreation but also to aid in physical development as a preventive of, or countermeasure to, disease.

This story has been summarized succinctly in a series of articles written by Ludwig H. Joseph, M.D., and published under the title "A Medical History of Gymnastics" in *Ciba Symposia*, March-April, 1949. With the permission of the editors of that magazine, these articles have been condensed into one and are presented here with a group of essays that signalize the continued interest of the medical profession in sport and athletics of all kinds.

Gymnastics from the Middle Ages to the 18th Century

Since its origin in antiquity, the concept of gymnastics has not been uniform. Educational and medical gymnastics were already known to the Greeks. Generally speaking, all definitions of gymnastics can be reduced to two: first, that every intensified movement is gymnastic exercise (Oribasius of Pergamon, 326-403 A.D.); and, second, that in each exercise there is the idea of active volition (Galen and Avicenna). The concept of medical gymnastics included all healthful and health-furthering exercises. For this reason physicians at all times advised the avoidance of any exaggerated activity, particularly professional athletics. The concept includes both preventive and therapeutic gymnastics, the latter including gymnastics for the sick, weak, and elderly. Herodicus (fifth century B.C.) was reproached by Hippocrates for treating patients with fever by gymnastics. Asclepiades (128-68 B.C.) used gymnastics in connection with massage and dietetics.

The Early Middle Ages.—During the Middle Ages, the gymnastic practices of the classic Greco-Roman era were forgotten, but the idea of curative gymnastics was not entirely lost in medical circles. The first medieval health book, "Regimen Sanitatis Salernitanum," twice mentioned exercises as therapeutic measures. The governing feudal class was obliged to care for the physical education of its members who, for the most part, were soldiers. A boy's physical education began at 14 with vigorous sports and exercises, including dancing, and the most important premilitary exercise was horsemanship. The exercises of the medieval nobleman were the seven mentioned in the "Mirror of Knights": (1) riding with rapid mounting and dismounting; (2) swimming and diving; (3) shooting with the bow and crossbow; (4) climbing on ropes, poles, and ladders; (5) fencing, wrestling, pushing stones, and jumping; (6) dancing; and (7) tournaments. The ordinary citizens and craftsmen also applied themselves to the first six varieties. Acrobatics by professional performers were a principal form of entertainment.

The Renaissance.—Classic gymnastics revived with the Renaissance and the rediscovery of Greek and Roman literature. With their increasing study, educational theory tried to achieve the aim of classical education: the man of vigor and wisdom. For this reason, the great teachers of humanism consciously introduced gymnastics into their educational program. Petrarch (1304-1374) in his pamphlet, "Against a Certain Physician," expressed the idea of substituting a natural therapy, such as exercise, for medical remedies that poison the body. Vittorino Da Feltre (1378-1446) made gymnastics obligatory in his educational program. In addition to his knowledge of medicine, he was learned in philosophy, science, mathematics, Latin, and Greek. Under the patronage of the Duke of Mantua he founded an educational institute in the country for children of the nobility and the poorer classes as well, where physical education preceded intellectual training. He selected for each student a type of exercise especially suited for his body, his age, the season, and the time of day. He was especially proud of the fact that he succeeded in changing the bodily constitution completely by means of special exercises in connection with dietetics. In general the exercises employed were riding, fencing, swimming, dancing, wrestling, running, jumping, archery, throwing the discus, ball games, hunting, fishing, and mock battles between two parties. All the games were played outdoors in both summer and winter. Vittorino left no writings, but his doctrine changed the spirit of all later education completely. This doctrine had the purpose of bringing to the highest perfection the three essential elements of man: body, mind, and soul. The introduction of gymnastics into the educational program was considered an indispensable preliminary condition for educational success.

Cardinal Aeneas Sylvius Piccolomini, later Pope Pius II (1404-1464), inveighed against the decay of the physical education that ought to precede spiritual education. For hardening purposes he recommended life in the country from time to time, physical work in the open air, and plain food. He considered hunting a sport especially suitable for physical education, since it is connected with a considerable number of exercises, such as riding, climbing, swimming, shooting with the bow, and hurling the spear, as well as hardening against the effects of weather. Francesco Barbaro (1395-1440) considered not only the spiritual but also the physical condition of both parents as highly important for the health of their child and therefore recommended physical exercise for young women too. Parents were also interested in play for their children so as to attain a healthy development of the body. Leon Battista Alberti (1404-1472) called special attention to physical exercise as of the highest importance even in early infancy. He recognized that thus the muscles are strengthened, the nerves become accustomed to strain, the blood circulates more quickly; in short, the whole physical being becomes more lively. In the daily plan of studies of Duke Philibert of Savoy prepared by Philelphus, a peripatetic teacher, two hours for gymnastics and games were allowed, including running, softball, and football. Florentine football was played in the principal square of the city in a sort of stockade by two bands of youths selected from honored soldiers, gentlemen, seigneurs, and princes. According to Bardi, "a good player should play his game with easy and sprightly grace, in the which he will easily succeed if he proceeds in all his actions with moderation and without passion."

Maffeus Vegius (1407-1458) in his book, "Education of Children and Their Good Habits," distinguished strictly two sorts of exercises: those that serve as recreation from intellectual work, and those whose purpose is the strengthening of the body. The former should be of a lighter nature; the others, including military exercises, require greater efforts. He wished to avoid heavy athletics, suggested moderation in all actions, and rejected exaggerated exercises. Juan Luis Vives (1492-1540) in the fourth book of his work, "On Instruction and on Christian Education," stressed exercise as indispensable for young students. He proposed long, rapid walks, running, jumping, and throwing the discus. He emphasized expressly that all exercises must be executed not in a military but rather in an educational manner; that they are not to be carried on to such a degree as to produce intellectual fatigue; and that, on the contrary, they should refresh the young men and stimulate them to new intellectual power.

Medical Gymnastics in the 16th and 17th Centuries

The humanistic educators had linked gymnastics so closely with education in general that it was no longer possible to eliminate it from the educational program. But their doctrines did not fructify the medical discipline, because medicine was still highly dogmatic and scholastic during this period. Physicians in the 15th century were skeptical about the use of gymnastics. Generally, it is characteristic of the position of medicine during the Renaissance that it did little to advance gymnastics, recommending only the lightest exercise. The great changes in culture and mode of life at the end of the 15th century and the beginning of the 16th century marked the end of the Middle Ages. Although the original Greek documents on medical subjects were brought to light in the 15th century, the results of their study appeared only gradually. On the other hand, such inventions as gunpowder and the art of printing produced an effect on the people of that period as revolutionary as the discovery of atomic energy today. The art of printing made possible criticism and interpretation of the classical writings in a new sense and facilitated the propagation of such knowledge in larger scientific circles than ever before. Moreover, a general fever of inquiry seized many physicians.

Influence of Mercurialis.—Hieronymus Mercurialis (1530-1606), with his "Six Books on the Art of Gymnastics," stood as sponsor to medical gymnastics. Characteristic of this work is the fact that every exercise is considered from the viewpoint of its usefulness to health, since he considered all gymnastics of only medical value. For him, the only exercises of interest to physicians are those characterized by introduction of the conscious will, and particularly by strenuous breathing and vehement movement. Mercurialis classified gymnastics into two kinds, corresponding to kinds of medicine, preventive (or conservative) and therapeutic gymnastics. Conservative gymnastics is for the healthy, therapeutic gymnastics for the sick. In the first place, the quality and the quantity of exercise should be accommodated to each constitution. Preventive and curative gymnastics both make use of a purely physiological remedy, movement. On the contrary, drugs, especially the medieval medicaments, poisoned and weakened the body. Based upon the Hippocratic definition of health as harmony of the humours, the aim of every healthy exercise is to maintain this harmony. Strenuous military exercises are therefore not always suitable, even for healthy bodies. Athletics is indirectly injurious to health. These injuries arise from defective nutrition associated with training, namely, excessive meat-eating; from suppression of normal sexual life; and from the effect on the lungs of dust inhaled in the arena.

Mercurialis set up the following principles for medical gymnastics: 1. Each exercise should preserve the existent normal healthy state. 2. Exercise should not disturb the harmony between the principal humours. 3. Each exercise should be suited to certain fixed parts of the body. 4. All healthy people must be interested in gymnastics and regular exercise. 5. Sick people are permitted only such exercises as do not exacerbate the existing condition of the patient; exact diagnosis must be the basis for such individualized treatment. 6. Convalescents and weak and older persons should have special exercises. 7. Persons who lead a sedentary life, as well as scientists and prisoners, urgently need gymnastics. For medical gymnastics he thought that spring and autumn are particularly suitable, and the winter even more, for vigorous exercises. In the summer months the early morning, in the winter the later hours of the morning are to be preferred for exercise. Such activity should always be carried on in the open air in a place sheltered from the wind. It is good to clean the body thoroughly,

even to take a purge before exercise, but exercise on an empty stomach is to be avoided. Gymnastics should strengthen not only the muscles but also the nerves, and should further sleep. According to Mercurialis, ball games strengthen the arms, the back, and the intercostal muscles and, therefore, are fit for convalescents, weak persons, and even for wet-nurses and epileptics. He discusses other kinds of exercise. Thus he distinguishes three sorts of walking: walking to and fro, in the sense of the Greek peripatetics, in order to stimulate intellectual conversation; then, more intensive walking, to aid digestion or to work up an appetite; finally, mountain climbing, because it is diaphoretic, to alleviate paralysis of the legs.

Merculialis considered running a very healthy exercise, when performed without carrying a burden and not over hurdles, and he thought running at night particularly healthy, because the body does not suffer the heat of the sun. This exercise strengthens the muscles and also the digestion. He recommended throwing the discus for the wrists of arthritic patients, especially, and for strengthening of the muscles of the legs, arms, hips, and back. Jumping he considered suitable for both sexes, though contraindicated for patients with pulmonary disease and pregnant women. Jumping with dumb-bells to increase the swing he considered unhealthy. Accompanied by music, gymnastics has a calming effect on the nerves. Athletic exercises, including hand springs, are to be rejected, as these push the intestines against the diaphragm. Only rope climbing and wrestling are wholesome. Very interesting, from the medical viewpoint, is the recommendation of passive gymnastics for patients confined to bed for a long time. This was to be achieved through the use of swinging beds, like hammocks. Like some modern physicians, he included in his work exercises of the voice, respiration, and even the eyes. Passive movements of the body on board ship, connected with the psychological effect of changing surroundings, Mercurialis considered wholesome for diseases of the lungs, larynx, and skin, as well as for headaches.

Followers of Mercurialis.—All books on gymnastics of the next centuries are based on this standard work of Mercurialis. The most original work after him in the field of gymnastics is devoted specifically to a single exercise, jumping. Entitled "Three Dialogues on the Acrobatics of Jumping by Saint Archange Tuccaro" (born about 1535), it mentions 53 varieties of jumping. Tuccaro tried to make the body flexible in youth. Although not a physician, he pointed out the medical benefit to be derived from this exercise. "This robust and strong exercise has a tendency to expel excrements and to calm all sorts of humours." Ambroise Paré (1510-1590), the famous surgeon, dealt in detail with movement and repose in the introduction to his "Surgery." He referred to the doctrine of Galen that the body needs exercise for health. In accordance with the theory of the humours, he reserved heavy exercise for large, cold-humoured persons, lighter exercise for thin and temperate ones. As did Mercurialis, he included breathing exercises and massage in gymnastics. Moderate exercise was to be taken before meals to help the digestion. Oddly enough, Paré added carrying of burdens to the usual exercises, such as running and riding. Not only did he consider gymnastics a part of general hygiene but, as a surgeon, he felt that exercise of the limbs, especially after fractures, was indispensable. He suggested light exercises for diseases of the kidney and bladder and for gout.

Joseph Duchesne (born 1544), who was physician to the court of Henry IV of France, wrote on exercise in his "Ars Medica Hermetica": "The essential purpose of gymnastics for the body is its deliverance from superfluous humours, the regulation of digestion, the strengthening of the heart and the joints, the opening of the pores of the skin, and the stronger circulation of blood in the lungs by strenuous breathing." Here, for the first time, we find swimming included on an equal basis with other exercises. It is contraindicated in cases of melancholy and diseases of the lungs but is considered as generally strengthening the body. Walking is recommended, particularly for those older persons who were formerly accustomed to more strenuous exercises. In his "Gymnastic Exercises," Laurent Joubert (1529-1583) attached great importance to daily exercises. As professor of medicine of the University of Montpellier, he was occupied particularly with the problem of introducing gymnastics and its use into the medical course. He considered physicians the only ones capable of prescribing gymnastics, rather than teachers and educators, whom he regarded as insufficiently educated. In the second book of Marsilius Cagnatus' "Preservation of Health," published at Padua in 1605, rowing is introduced into medical gymnastics for the first time.

Physiology and Gymnastics.—Physiology gave gymnastics a scientific basis, liberating it from empiricism. Sanctorius Sanctorius (1561-1636), physician of Padua, was first to study scientifically the body during perspiration. Attendant upon the progress of mechanics, there developed an increasing interest in human and animal movement. The literature on this subject began with Jean Canappe's short essay, "The Movements of the Muscles," published in 1546. The great progress in the physiology of the muscles continued into the 17th century. Many medical works covered this subject, for instance, Claude Perrault's "Mechanics of Animals" (1680), Ulisse Aldrovandi's "On Quadrupeds," Fabricius ab Acquapendente's "Movement of Animals" (1614), and the book on animal movements by Antoine Deusing (1612-1666). Girolamo Cardano's (1501-1576) theory of the movement of the muscles is conceived entirely from a mathematical-mechanical standpoint. He himself practiced gymnastics daily. He recommended light exercise for pregnant women, swimming, but no exercise for older men.

Gymnastics in the Pre-Revolutionary 18th Century

The 18th century is characterized by the Enlightenment and the movement for a return to Nature. Representative of the Enlightenment is the great "Encyclopedia" of Diderot and D'Alembert. Volume 7 of the 1757 edition contains the following definition of gymnastics: "men acquire bodily force and agility by different means for different purposes." Military gymnastics arose from the need of men to assure their safety. Medical gymnastics arose from the need of men

to take care of their health with suitable exercises ordered by physicians. Athletic gymnastics grew out of the desire to give public exhibitions of strength and agility. Regarding gymnastic medicine the dictionary adds: "medical gymnastics, although simple in origin, became too complicated in practice, and ended in an excess of luxury, effeminacy, and voluptuousness." The life of the upper classes was never as artificial as in this rococo period. It is especially remarkable, therefore, that, despite all such customs, even in these times, gymnastics did not disappear entirely from the educational program.

Nicolas Andry (1658-1747), professor of medicine at the Royal College of Paris, in his "Orthopédie" took an entirely new road. The word orthopedics was introduced to medicine by this author. The subtitle makes clear to us the purpose of the author: "the art of preventing and correcting the deformities of children's bodies." Andry advises parents to pay attention to the bodily development, even of infants. He recommends special exercises to obtain large flat collarbones and a well-shaped chest. These consist in stretching the arms with wands, lifting up a rope reaching to the ground, and holding the wand extended horizontally. The spine is to be made flexible by flexion over the lap or the knees. This exercise with the hands on the ground, made without any assistance, is known in gymnastic nomenclature as the bridge. In general, to prevent deformities or to cure present ones, Andry recommended exercise of the legs or the arms, with or without wands, carried out very energetically in case of paralysis or after fractures. While he recommended for the children of the upper classes such exercises as riding and hunting, for the poorer classes he proposed rural work as a substitute for gymnastics.

Sabbathier in 1772 deplored the bad habits of his time, urged moderate gymnastics for convalescent and weak persons, but rejected all athletic exercises as unhealthy. In England, Francis Fuller, in his "Gymnastic Medicine" of 1705, lamented the decay of physical education and medical gymnastics. In Germany, the physician Johan Zacharias Platner in his "Gymnastics of Antiquity" (1724) bitterly expressed the opinion that his time hardly appreciated healthy daily exercises and that all sense of the necessity of gymnastics to preserve a healthy body was lost. Joseph Tissot (1756-1826), a French military surgeon, called his work "Medical and Surgical Gymnastics" and described it as an essay on the usefulness of movement, on different exercises, and on repose in the cure of diseases. He said that moderate gymnastics gradually produced a lasting result but that, on the other hand, strongly exaggerated exercise was injurious to muscles and internal organs, through excessive wear and tear. Therapeutic gymnastics is indicated especially for rheumatism and gout. During convalescence from chronic diseases, he suggested slow and gradually increasing bed exercises. He proposed exercise even during convalescence from abdominal diseases. Gymnastics was to be supplemented by massage, especially before swimming, and by relaxation afterwards.

Giuseppe Nenci, professor of medicine at the University of Siena, in his "Discussion on Gymnastics with Regard to Its Use in Medical Practice" (1766) advocated curative gymnastics, which, in contrast to drugs and surgical therapy, is less energetic, particularly if used gradually and individually. Life and health consist in a continuous but equilibrated movement of fluids distributed into innumerable channels of the body. During this continuous movement, some parts are dispersed or must disappear entirely. Therefore, they must be supplied by others through alimentation. It is perspiration, on one hand, and a correct distribution of fluids, on the other, which leads the necessary introduction of new humours. Moreover, the alternating extension and contraction of the muscles extracts the blood from the veins of the heart and the lungs; in this way they facilitate the entrance of fresh blood into arteries. Therefore, gymnastics is the necessary precondition for the provision of blood to the whole body. Practically, this fact is manifested by an augmented diaphoresis and opening of the pores of the skin. This has a therapeutic effect on skin diseases, obesity, gout, and dropsy, which are characteristic diseases of blood stagnation. Nenci suggested light daily exercises for intellectual workers, older persons, and delicate women. Long walks or riding, which he considered the most natural exercises, are beneficial to both body and mind.

Summary

Looking at the development of gymnastics from the early Middle Ages on to the beginning of our modern era, one can see that, after the decay of antiquity, physical education had to be built up anew. The influence of classic gymnastics emerged only in the Renaissance. Seldom in the history of human culture has the intellectual climate been changed so consciously as in the epoch of Humanism and the Renaissance. The education of the Western European youth was based consciously on the Greek ideal of man, found anew in works of art, literature, and science. It was a natural consequence, therefore, that educational gymnastics appeared. Its aim—to harmonize intellectual and physical education, in which is included also the psychic influence of exercise—henceforth remains the basis of every successful educational program.

The medical use of gymnastics could be understood only in a period when medicine began to emancipate itself from the fetters of dogmatism. Just as the time was ripe for a Columbus to discover America, so it became mature for a Mercurialis to establish medical gymnastics, and to consider exercise only from a medical and hygienic standpoint. This medical appreciation was at first empirical. But at the end of the 17th century, stimulated by the progress of physiology, attempts were made to give to exercise a scientific basis. The 18th century provided social influences that showed new purposes for gymnastics. Orthopedic gymnastics arose from the unnatural clothing of this period and the deformities of the body connected with it. Orthopedic gymnastics leads directly to the Swedish gymnastics of our time. Thus medical gymnastics reached its definitive form in the period before the French Revolution.

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PHYSICAL FITNESS FOR ALL

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• *There is evidence of continued neglect of those activities whereby men and women should strive to maintain a healthful degree of physical strength, agility, and endurance. A lack of physical fitness limits one's opportunities for a full enjoyment of professional and personal life. Formal exercises can take the place, to some extent, of physical work. A planned program of exercises can be adapted to the individual's age, and, by progressing from a cautious beginning, it can be developed sufficiently to undo the mischief of long periods of neglect. The physical activity also results in certain mental satisfactions that make for a feeling of alertness and power. A set of exercises chosen from those herein described can increase the individual's ability to meet the day's physical and mental tasks.*

What is meant by physical fitness? Certainly, during the past year, that term has been uppermost in the minds of all Americans for many reasons. Coronary disease is prevalent in both men and women; statistics revealed by the Kraus-Weber experiments indicate the lack of fitness in the American boy and girl; the school programs of physical education fail to concentrate upon the physical development of all students and emphasize instead the few who are well-skilled in athletics; and the American people continue to prefer being spectators instead of participants in sports. All this points to the necessity of reeducating the public to the importance of a well-conditioned body. To be physically fit an individual must have a good capacity for performance and endurance, sound physique and smoothly functioning organs, and adequate muscular strength; strength, speed, agility, and endurance must be a part of each individual. Each day holds a responsibility to go forward toward maximum fitness whether the future holds war or peace, a soft life or a hard life. The individual can fit only into such a niche as demands the capacity he possesses, so that the greater his fitness and his ability to maintain it at his peak capacity, the more life's doors will open to him. Fitness to enjoy life to its fullest—physically, emotionally, and spiritually—is the fitness that each individual really wants.

Too many American people have neglected to engage in regular systematic exercise. Few men (except when there is a war at hand) make an effort to reach and maintain top physical condition. Only the 10 or 15% of boys and young men in the secondary schools and colleges who are out for varsity teams get in fairly good condition. The other 85 or 90%, as a rule, do not attain a high degree of physical fitness. The percentage of Americans who lack this high degree of physical fitness becomes much higher when we limit our study to men and women over 30 years of age. Although America is known as the land of sports, there is not a widespread intensive participation in sports on the part of the majority. A visit to any of our large bathing beaches during the summer will reveal thousands of individuals clad in bathing suits and lying on the sand, but few of them actually swimming. Probably many of them do not know how to swim, and, of those who do, a swim of 10 or 15 yd. at a time is the usual limit. Then, too, there are many sports spectacles in this country, but, except for the few players who are participating, there is not much exercise taking place. So it is obvious that too many people function below their normal capacity. It seems essential that, if we desire to get the most out of life, we must learn to increase the demands on the body and develop greater power, strength, and endurance for sustained effort. We must work for poise and skill in the use of our bodies.

Benefits of Exercise

There is no doubt that exercise benefits the body in many ways. Physical strength and general body conditioning are essential for growing boys and girls. Sufficient strength, particularly in the arms and shoulder girdle, the abdomen, and the pelvic girdle—a basic torso strength of all large muscle mass—is essential in order to have good control of the body. Participation in various sports, either for conditioning exercises or for body building, must be considered as one means of attaining such strength. Formal exercise can accomplish the same goal. It is a well-known fact that an individual is much more efficient in the performance of a skill if the muscles involved are in the best of condition. This implies specific concentration upon their development. The physical benefits of such exercises are improved posture, flexibility, agility, good balance, increased strength, and endurance. The functions of the various systems of the body are improved by exercise. For example, the general circulation of the body is accelerated, and the improvement results in food and oxygen being carried more efficiently to the body tissues.

In addition to physical development, exercise has a soothing effect upon the nervous system. During exercise the nervous system becomes more active than during sedentary mental work, but less fatigue results because the physical fatigue that comes from vigorous exercise serves as a mental tonic. Furthermore, a person who is physically fit does not have to apologize for being unable to engage in an activity, and he often finds himself able to do many things formerly considered beyond his capacity. Finally, when the desire for activity has been satisfied through the performance of wholesome physical activities, significant mental satisfactions follow. The person who is physically fit has an indescribable feeling of virility and power. He is much better prepared for meeting the problems of his day than if he were "soft" and out of condition.

Exercise also is an organic means of remedying the past neglect of the body, for, even if the body has not been given sufficient exercise, nature quickly helps to repair this past neglect. A program of exercise that involves the large muscles of the body and is not too severe at the start soon causes the body to respond. The organic systems begin to show new energy, the muscular system begins to become better toned, and

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the flesh becomes more firm. Gradually the body shows greater endurance and more capacity for work, and there is a rapid recovery from fatigue.

Planning an Exercise Program

The primitive man had little choice in the matter of exercise; if he wished to survive he had to engage in many forms of activity. Today it is different. One must plan to allow time for healthful exercise, and this exercise must be adapted to one's age and present physical condition. When one has done little or no systematic exercising, he must naturally go easy at first, for perhaps three or four weeks. Especially after an individual reaches 25 or 30 years of age, exercising must be gradual, because the muscles and arteries lose some of their elasticity and are unable to withstand the strain of sudden or prolonged vigorous activity. Regularity of exercise, however, is the important factor, along with this gradual increase in difficulty.

Adapting the type and amount of exercise to the individual must be stressed. The busy person who can give only a little time each day to physical exercise might do well to select an exercise for each part of the body: for posture; for strengthening the abdomen; for arms, shoulders, and legs; and for raising the chest and strengthening the muscles of the upper back. Such a routine might include exercises from a supine position, such as pelvic rolls, sit-ups, raising the knees, rotating the knees, or the exercise in which the toe touches the opposite extended arm. From a prone position, such exercises as hip raising (jackknifing the body up and down) or chin-up (lifting the head) would be helpful. Also, the individual might try the following exercises: sitting with legs straight, he might stretch by bending his trunk forward; sitting with his hands behind his head, twist his trunk; or squatting, imitate a jumping jack.

The general rule, "remember your age," must be adopted, because men and women under 30 may exercise with more speed and endurance than those over 30. After 30, one should work for endurance and not for speed. Just as "an apple a day keeps the doctor away," so a little regular and systematic exercise each day will help the individual to meet daily tasks with a better body and a more alert mind.

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EFFECT OF WARMING-UP UPON PHYSICAL PERFORMANCE

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• Three methods of warming-up were compared as to their effects on the time required for seven athletes in a 440-yd. (402-m.) run. The means were obtained from 20 runs after five minutes of deep massage of each leg, 20 runs after five minutes of superficial massage (digital stroking) of each leg, and 20 runs after preliminary exercise. The differences found among these three methods of warming-up were statistically not significant. In a second experiment the performance of five runners in the 440-yd. run without warming-up exercise was compared with their performance after superficial massage; again the difference was insignificant. In a third experiment, an attempt was made to verify reports of other investigators that warming up by preliminary exercise improved performance; the test consisted of completing 35 pedal revolutions of a bicycle ergometer in the shortest possible time, the amount of work being 956 kg.-m. The warming-up exercise consisted of 60 pedal revolutions per minute for five minutes with a load of 5.5 lb. (2.5 kg.); it increased the mean muscle temperature by 1.3 C (2.3 F), but the effect upon performance again was not significant. Outstanding performances in the first experiment were made by men who had warmed up by deep massage, but an outstanding performance in the second experiment was made by a man who had not done any preliminary warming-up. In these experiments neither deep or superficial massage nor preliminary exercise improved the time of running; there was no evidence that massage had a beneficial psychological effect on the runner or that preliminary exercise improved sprint performance on the bicycle ergometer.

It is almost axiomatic with coaches and athletes that a preliminary warming-up is indispensable for a good performance. The type and duration of warming-up varies, depending upon the country, the coach, the sport, and the individual preference of the athlete. Warming-up may be subdivided into two types, general and formal. In the general type, one may use exercises involving large groups of muscles, massages, hot showers, or other devices to raise the temperature of the body. In the formal type, warming-up consists of the movements that are used in the actual performance.

Two reasons are advanced for general warming-up. It is said that the strength and speed of muscular contraction increase with a rise in muscle temperature, and that the possibility of injury due to sudden forceful muscular contraction is lessened. The formal warming-up is credited with an improvement of coordination. While there seems to be general agreement regarding the importance of the formal type of warming-up, the effects of general warming-up may be questioned. True, no one will question the beneficial effect of warming-up when limbs may be almost numb from cold, but there is a suspicion that the practice of warming-up is frequently overdone.

To our knowledge no objective evidence has been presented that warming-up reduces the number of athletic injuries. As to the experimental evidence of an improvement in performance resulting from warming-up, there have been few studies reported. Asmussen and Bøje [1] studied the effect of preliminary work,

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short-wave diathermy, hot shower, bath, and massage upon performance on the bicycle ergometer. All methods of warming-up, except massage, were reported to be beneficial in both sprint and endurance rides. Schmid,[2] on the other hand, reported that not only setting-up exercises, hot bath, diathermy, and shower with alternating hot and cold water but also massage improved performance of both men and women in swimming 50 m., running 100 m., and riding the bicycle ergometer. Simonson and co-workers [3] also found that preliminary exercise improved running time of the 100-m. run for both men and women.

Malarecki [4] reported that not only actual warming-up exercises but merely imaginary exercises increased the speed of running 60 m. Hipple,[5] on the other hand, found that preliminary running had no beneficial effect upon the speed of a 50-yd. run. Carlile [6] reported that an eight-minute hot shower caused a 1% improvement in swimming 40 yd. The scholarly report of Asmussen and Bøje was most convincing. However, their negative findings regarding the effect of massage prompted us to investigate the effect of this type of warming-up. This investigation lead to two additional ones. Thus this paper represents a report on three series of experiments.

First Experiment

On the evidence presented by the previous investigators it was assumed that, except for massage, the various methods of warming-up beneficially affected physical performance. Therefore, the first study was designed to compare the effect of deep massage with that of preliminary exercise upon time of running 440 yd. In order to detect any possible psychological effect of massage, we decided to use performance after a light superficial digital stroking as a control.

Procedure.—Seven track athletes of Springfield College were used as subjects. All had previously run the required distance of 440 yd., and all were members of the freshman or varsity track teams. Each subject warmed up and performed individually on an outdoor track. A total of 60 test runs was made, 20 after deep massage, 20 after preliminary exercises, and 20 after digital stroking.

Digital stroking consisted of slow, gentle, rhythmic, and centripetal stroking covering the entire leg for a five-minute period. When deep massage was used, a five-minute general massage of each leg was administered. The same investigator served as masseur in all cases. Preliminary exercises included jogging 440 yd., setting-up exercises, and short sprints of 20, 30, and 50 yd. This warming-up took approximately 10 minutes. In deciding on the duration of warming-up, we were influenced by the findings of Asmussen and Bøje, who reported that the first five-minute period had the greatest effect. To be safe, we doubled this period.

Three afternoons a week for a three-week period were used for testing. It was observed that trackmen appeared to run better toward the end of the week than at the beginning, so a rotation of methods of warming-up was used. For example, the first week the subject would receive digital stroking before his performance on the first test day, on the second day he would receive deep massage, and on the third test day he would use exercises. The methods of warming-up were then rotated, so that on the first test day of the second week the subject would receive deep massage; the second test day, exercises; and the third test day, digital stroking. The third week the methods were rotated one step more, with the subject receiving preliminary exercises the first test day, digital stroking the second test day, and deep massage the third test day. All methods of warming-up were used on each test day in order to minimize the effect of such uncontrollable variables as the condition of the track and the effect of the wind. Thus, some subjects were given digital stroking, some were given deep massage, and some were given exercises on the same test day.

Results.—It can be seen in the table that there was no statistically significant difference in the running times after deep massage, preliminary exercises, and digital stroking. Since the difference in times was not statistically significant, the psychological effect of massage was not discernible.

Effect of Various Methods of Warming-Up on the Time of Running a Distance of 440 Yd.

Method of Warming-Up	Mean, Sec.	Standard Error, Mean	Standard Deviation	t-Ratio
Deep massage	55.6	1.53	4.05	0.48*
Digital stroking control	56.6	1.41	3.74	
Preliminary exercise	56.0	1.38	3.65	0.28*

* The differences in performance are not statistically significant.

Second Experiment

Because the results obtained in the first experiment showed that performances were equally good after deep massage, preliminary exercises, and digital stroking, the second experiment was conducted to compare the running time after digital stroking with that of a "cold run," when no preliminary warming-up was used.

Procedure.—Five highly trained varsity and freshmen track athletes of Springfield College were used as subjects. Each subject was tested four times, twice without warming-up and twice after digital stroking. The activity selected for testing was the 440-yd. run on an indoor track. As in the first experiment, digital stroking was used in order to detect any possible psychological effect of massage.

Results.—The average running time when no preliminary warming-up was used was 59.2 seconds, while the average time attained after digital stroking was 59.5 seconds. The computation of the t-ratio indicates that the difference between the effects of these two methods is not significant. The results may also be interpreted to mean that, whatever the psychological effect of digital stroking could be, it did not affect the running times.

Third Experiment

From the results of the first and second experiments, it was concluded that neither massage nor preliminary exercise improved the time of running 440 yd. Our conclusion that massage had no beneficial effect substantiated the findings of Asmussen and Bøje. How-

ever, the finding of lack of improvement after preliminary exercise, which is contrary to the findings of the previous investigations, made it necessary to study once again the effect of preliminary exercise upon performance. Since the only activity engaged in by the subjects was walking to and from classes and from the last class to the test, the question arose as to whether this walking was sufficient to substantially raise muscle temperature.

Procedure.—Warming-up prior to the performance consisted of riding the bicycle ergometer at a speed of 60 pedal revolutions per minute for five minutes with a load of 5.5 lb. On days the subjects rode without warming-up, they reported to the laboratory and without any preliminary warming-up they were given their test rides. No subject had been engaged in any physical activity for at least two hours before the test rides except walking to and from classes. The test rides were the same as the sprint performances used by Asmussen and Bøje, which they assumed to be equivalent to the 100-m. run. Each ride consisted of completing 35 pedal revolutions in the shortest possible time, the amount of work done being 956 kg.-m.

The three Springfield College students who were used as subjects were all excellently trained for this experiment, since they had just completed riding the bicycle ergometer for another study that had continued for several months. Twenty-four test rides were made: 12 after preliminary warming-up and 12 without preliminary warming-up.

Results.—The average time for the sprint rides without preliminary warming-up was 14.2 seconds, and that with preliminary warming-up was 13.7 seconds. Computation of the t-ratio showed that the warming-up did not have a significant beneficial effect on sprint rides on the bicycle ergometer.

Comment

If the interpretation of the obtained data were made on the basis of mean time of performance, it would have appeared that deep massage and preliminary exercise have a beneficial effect upon performance. A statistical analysis of the difference in time, however, showed that it was not significant and fell within the limits of experimental error.

The muscle temperature of men in the third experiment was 36.4 to 37.0 C (97.5 to 98.6 F) in cold state and 37.6 to 38.4 C (99.7 to 101.1 F) after warming-up. Therefore, a similarity between performance time with and without preliminary exercise cannot be explained by assuming that subjects who were scheduled to have a cold run warmed up by walking to the laboratory.

The running times recorded during the tests indicated that all subjects exerted maximum effort. In the experiment on the outdoor track, two of the subjects ran their fastest time of the track season. Both these performances occurred after warming-up by deep massage. One of the subjects in the second experiment surpassed the Springfield College indoor track record for the 440-yd. run. He ran without any preliminary warming-up.

Summary and Conclusions

Three series of experiments were conducted to determine the effect of warming-up upon physical performance. In the first experiment, seven trackmen ran 440 yd. after deep massage, exercises, or digital stroking. Digital stroking was used as the control and to study possible psychological effects of massage. In the second experiment, five men ran 440 yd. without warming-up and after digital stroking. In the third experiment, sprint rides on the bicycle ergometer after preliminary exercises and without warming-up were compared.

The experiments showed that deep massage, digital stroking, and preliminary exercise did not improve the time of running a distance of 440 yd. They also indicated that there was no beneficial psychological effect from massage. Finally, preliminary exercise did not improve sprint performance on the bicycle ergometer.

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Radioautography.—The term radioautography denotes a method of studying the distribution of radioisotopes which have become incorporated in an organism by observing the patterns created when the radiation from the isotope impinges upon a photographic film placed near the tissues. Radioautography is superior to the counting methods for some types of biomedical research with radioisotopes. For instance, accurate determinations of the sites of deposition of isotopes in organs and tissues (and in special cases in individual cells) can be made by means of radioautography. It is also possible to estimate the relative quantities of radioisotope in the various parts of a tissue. Occasionally, amounts of radioisotopes which will barely record on a counter will yield useful information by radioautography since the photographic film can integrate the radiation dose over a much longer time than is practical with Geiger-Mueller or scintillation counting. Furthermore, accurate counting radioisotopes in tissues requires the destruction of the tissue either by ashing, dissolving in acid or alkali, or homogenizing. This is not necessary with radioautography where the tissue, or at least the histological slide, remains intact and may be correlated with the pattern of the radioautogram. Several variations of the techniques of radioautography have evolved—such as: placing a photographic film (with its backing) in apposition with an histologic slide, floating the film (free of its backing) onto the tissue, mounting the tissue directly on a cut film instead of a slide, painting the melted film emulsion over the tissue on a slide, as well as others, and combinations of those stated. . . . In preparing the tissue slides for radioautography the chemical state of the isotope being used in the study determines the methods used for fixation and staining. Many of the reagents used in fixation, embedding, and staining may mobilize the isotope under investigation, removing it partially or entirely or causing it to diffuse more or less uniformly through the tissue. . . . In setting up new work it is well to monitor the various reagents through which the tissues are processed. If it appears that significant amounts of isotope remain in the reagents the method should be changed. All manipulations of the tissue should be such that the isotope is retained in its original positions.—D. Joftes and S. Warren, M.D., Simplified Liquid Emulsion Radioautography, *Journal of the Biological Photographic Association*, November, 1955.

NUTRITION AND ATHLETIC PERFORMANCE

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• *The performance of an athlete can be impaired significantly by a faulty or inadequate diet, even before clinical signs of a deficiency are manifest. But the manipulation of an already adequate diet does not enhance performance. The composition of a meal preceding single-effort events like the high jump has little effect on performance, but performance in tests involving prolonged muscular work is enhanced if carbohydrate stores are replete at the beginning of the test. Obesity is a mechanical handicap in most, though not in all, forms of athletics. The average corporeal density of athletes is higher than that assumed for the general population; therefore the usual height-weight tables give the misleading impression that an athlete of given height is too heavy and presumably obese. Placing him on a reducing diet would be a mistake. Ordinarily he will spontaneously ingest food in amounts sufficient to maintain his weight. Performance is generally influenced by motivation, skill, and other neuromuscular and psychological factors. The training table provides the athlete with the foods on which he has learned he can rely; it also provides some of the sense of security generally obtainable by the practice of rituals. The best diet for him is a balanced one consisting of a variety of the foods he enjoys, in amounfs that maintain his weight at an optimum level.*

Manipulation of the diet in order to enhance physical performance is a procedure that has its roots in the superstition and magic of the unrecorded past. At one time, men swallowed powdered lion's teeth to make them strong. Similar practices are still carried on in primitive cultures. For many centuries the popular belief existed that violent muscular exercise requires the eating of a large amount of meat, and in the 19th century Liebig gave scientific support to this tenet by proposing that during exercise the substance of the muscles is used up. He stated, "All experience proves that this conversion of living muscular substance into compounds destitute of vitality is accelerated or retarded according to the amount of force employed to produce motion." Subsequent experiments showed conclusively that heavy exercise is not associated with any significant increase in loss of nitrogenous material; however, the conviction that meat was the food par excellence of the athlete was so strong, and the prestige of Liebig so great, that a number of years passed before the doctrine of "meat for muscular work" was reluctantly discarded.

According to Drummond and Wilbraham, concern for the diet of athletes paralleled the growing interest in sport that began to be apparent in England toward the end of the 18th century. Early in the 19th century, it was customary for the athlete to begin his training with a series of strong purges to clear away "all the noxious matter he may have had in his stomach and intestines." After this "purification," unseasoned red meat (preferably underdone), bread, and mild beer were prescribed. Drummond and Wilbraham have written:

> The Oxford crew in the 'sixties trained on a diet of underdone beef or mutton, bread, tea and beer, with a little jelly or water cress as a treat at the evening meal. Instructions were given that no vegetables were to be eaten. Cambridge, on the other hand, suffered no restrictions regarding potatoes, greens, or even fruit. From 1861 to 1869 there was an unbroken succession of Oxford victories. So much for vitamins in athletics!

It is convenient to consider the effect of diet on physical performance at two levels: psychological and physiological.

Psychological Considerations

Much still needs to be learned about the effect of the psychological state of the athlete upon his performance. Yet, it is widely agreed that motivation plays a major part in determining whether an athlete will win a contest. The food that is consumed during training and immediately before an athletic contest may have a psychological significance for the athlete that exceeds its physiological and metabolic importance. The significance of eating rare meat as a symbol of manly vigor and strength is obvious. In the course of his training program, the athlete frequently must work hard and forego many pleasures. Accordingly, his need for gratification is accentuated. Some of this need can be met by providing him with appetizing foods, such as special desserts and rare beef. This provision makes him feel that training has its incidental rewards and helps to prevent him from "going stale." Presumably, there is an element of atavism in the emphasis on eating meat at the training table.

The drinking of milk (although not always recommended at the training table) has in some cultures become associated with the idea of health and "clean living." Then, too, the training table may provide some of the sense of security and reassurance generally obtainable by the practice of rituals. Use of various rituals by athletes in preparing themselves emotionally for contests is well known. Thus, food has a significance far beyond the nutrients it provides. Also, the atmosphere in which food is served is frequently more important than the quality of the food served. The morale value of turkey at Thanksgiving has been recognized by the military services, and on this holiday American soldiers stationed in far-off lands are served turkey, regardless of the cost involved.

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A number of studies have purported to show that between-meal feedings during working hours improve the efficiency of performance of industrial workers. However, when such studies have been repeated with use of suitable controls, it has usually been possible to demonstrate that the beneficial effects were psychological rather than physiological in origin. When ingestion of sugar before an athletic performance seems to have a salutory effect, it is difficult to decide whether this response occurs for psychological or physiological reasons.

In view of the importance of psychological factors in modifying physical performance, it would be unwise and unjustified to deprecate the psychological value of food, and of the ritual of the training table for the well-being of the athlete. However, it seems important to study these psychological aspects of food and the training table carefully in order that their contribution may be better assessed and clearly distinguished from possible physiological and metabolic factors.

Physiological and Metabolic Considerations

Digestion and Athletic Performance.—Considerable attention has been paid to the pregame or preevent meal. As Bensley has pointed out, the chief consideration to be borne in mind in planning this meal is the emotional stress that the athlete may experience on the day of the contest. Loss of appetite, abdominal discomfort, and even nausea, vomiting, or diarrhea may occur. If the meal is taken too close to the game or event, the anxiety of the athlete may interfere with appetite and digestion. Moreover, the distended stomach may impair performance. Therefore, in most cases, the preevent meal should be consumed not less than three hours before the contest. Individual food preferences should be respected. The athlete knows from experience which foods can be eaten without causing him discomfort. As a general rule, only foods known to be highly digestible should be consumed as part of the preevent meal.

Sources of Energy During Athletic Activity.—It is clear that variations in the normal diet cannot significantly influence the coordination and controlled expenditure of energy required in an athletic performance. These are matters of endowment and training. Conceivably, changes in diet may affect the amount of energy and the rate at which this can be made available. Obviously, an enormous variation exists in the expenditure of energy by athletes, and many classifications have been used to divide athletic performances in terms of energy expenditure. One such classification distinguishes four groups: (1) single-effort field events, such as the high jump, the broad jump, putting the shot, and pole vaulting; (2) sprints and hurdle races; (3) middle-distance runs, such as the mile run; and (4) prolonged efforts taking more than one hour, as exemplified by the marathon.

From what is known about intermediary metabolism, it would appear that the sources of energy for these classes of endeavor may be somewhat different. For example, in the single-effort events and sprints requiring bursts of effort, the body can make use of stored energy readily available from the energy-rich organic phosphates, adenosine triphosphate, and creatine phosphate. However, in order for the high-energy phosphate bonds of these compounds to be regenerated, fuel must be metabolized. To a limited extent, energy-rich phosphate bonds can be regenerated by the breakdown of glycogen to lactic acid, a process that does not require oxygen. However, the major supply of energy expended by the body is derived from the complete oxidation of small fragments derived from carbohydrate and fat. Indeed, per molecule of glucose, oxidative phosphorylation is much more effective than the phosphorylation connected with lactic acid formation.

In the 100-yd. dash, the oxygen requirement is over 6 liters. Since the human respiratory and circulatory equipment can provide only approximately 4 liters of oxygen per minute, it is clear that muscles are able to perform work and replenish energy stores for a limited time in the absence of oxygen. This is accomplished primarily by the breakdown of glycogen to lactic acid. However, this process is self-limited, since under such circumstances high-energy phosphate bonds are not regenerated as rapidly as they are broken down. Moreover, an accumulation of lactic acid in the blood occurs as a consequence of massive anaerobic glycolysis, and before long the products of the reaction, glycogen → lactic acid, accumulate to a point where the reaction itself can no longer proceed. Lactacidemia also may unfavorably affect blood acid-base balance and, consequently, the metabolic and physiological functions that depend on the maintenance of pH level within a certain optimal range. The oxygen needed to make up the energy deficit incurred during muscular exertion in the absence of adequate oxygen intake has been termed the oxygen debt. Not all of the oxygen debt is associated with lactic acid production: the balance ("alactacid" oxygen debt) may be used to restore creatine phosphate and adenosine triphosphate levels, and possibly to metabolize accumulated ketone bodies.

During the recovery phase, oxygen in excess of current needs is taken in to make up this deficit, which may be as high as 16 liters. In large part, the extra oxygen is used to oxidize the lactic acid accumulated during the deficit period. Such an oxygen debt can be incurred rapidly or more slowly. In practical terms, if an athlete exercises to a degree so that he needs 8 liters of oxygen per minute, he can maintain such a pace for only approximately four minutes, since in that time he will have reached the oxygen debt "ceiling" of about 16 liters. Since the oxygen requirement increases rapidly with an increase in running speed, the ability of the sprinter to achieve a pace almost 50% faster than that of the mile runner becomes readily explicable in physiological terms.

It must be emphasized that the body is not able to maintain an intake of 4 liters of oxygen per minute for very long. If exercise has to be maintained for a matter of hours, oxygen consumption approaches one liter per minute. Thus, as the energy expenditure of the athlete becomes more prolonged, its intensity must diminish. As its intensity lessens, the relative importance of the oxygen debt mechanism also diminishes. For moderate distances, the runner may

depend in part on his "recovery" period; for long distances, he must run in a "steady state" (the condition in which the intake of oxygen meets the metabolic needs of muscle).

It would seem that, in the first three classes of athletic events listed above, the fuel supply is an item of minor concern, since the amounts of energy used are relatively small. In the fourth class, where endurance may be a deciding factor, the fuel supply becomes relatively more important. In any event, since diet does more than merely provide fuel for muscular activity, a more detailed analysis of the ways in which diet can influence performance is appropriate. Before such an analysis can be undertaken, however, the methods and criteria used in the assessment of physical performance should be briefly considered.

Influence of Diet on Physical Performance.—It has already been mentioned that motivation, skill, and coordination play important roles in determining the outcome of athletic contests. Thus, it is inherently difficult to study the problem of diet in relation to performance under satisfactorily controlled conditions. As Marrack has stated, "Excellence in athletics does not depend so much on the energy output by muscles and the rate at which this output can be maintained as on the skill with which this energy is used." Use of studies with animals in assessing the effect of diet on performance is not a particularly helpful procedure because of the difficulty in interpreting in human terms quantitative changes that may be measured in experimental animals. Keys has properly stressed the importance of using rigid standardization and has criticized many earlier studies because they were not sufficiently prolonged to eliminate the period of adaptation to a new dietary pattern suddenly imposed on the experimental subject.

Generally, the criteria used involve measurement of performance of an actual physical task, such as swimming 100 yd. or running a mile. The responses of such physiological factors as pulse rate, body temperature, and time of reaction to muscular activity also serve as indication of the ability to perform under standard conditions. Biochemical changes in the blood, particularly variations in values of blood glucose, lactic acid, and ketone bodies, have been measured during and after a standard task and used as indexes of performance.

The term "efficiency" applied to muscular activity is a technical expression that refers to the energy cost of mechanical work. Ordinarily, efficiency is calculated in one of two ways: as gross efficiency (total energy output in relation to mechanical work done) or as net efficiency (the increment of energy output over some predetermined base-line energy output, such as the resting or the basal metabolic rate, in relation to mechanical work performed). Gemmill has discussed the merits and disadvantages of such calculations in a comprehensive review. Of numerous methods for measuring the mechanical energy developed by man during exercise, the most commonly used is the bicycle ergograph. Considered as a machine, man operates at a maximal efficiency of about 25% (calculated for climbing stairs); this is somewhat better than the ordinary gasoline engine but not as good as the diesel engine.

In his review of the problem of physical performance in relation to diet, Keys has listed three ways in which special dietaries might influence muscular performance. These involve (1) renewing the supply of energy-yielding nutrients, (2) facilitating the energy-yielding reactions, and (3) counteracting physical-chemical changes in the body identified with fatigue. A fourth way in which diet can favorably influence physical performance is by reducing any appreciable excess in fat content of the body. Such a decrease in adiposity will result in a proportional decrease in the energy cost of moving the body or its parts.

The first of these categories has to do with the fuels of muscular exercise—carbohydrate, fat, and, to a lesser extent, protein. Because vitamins are essential constituents of enzyme systems, which, in turn, are an important part of the machinery of energy metabolism, these nutrients properly fall into the second category, which is concerned with the problem of facilitating the energy-yielding reactions. Since fatigue is believed to be a manifestation of altered physiology induced by excessive muscular work, the influence of muscular work on homeostasis can be considered in the third category. Lastly, since excess fat results from a positive energy balance maintained for a prolonged period, the problem of reducing the athlete's weight must be thought of in terms of the caloric provision at the training table measured against the day-by-day energy expenditure calculated for that particular person. Moreover, in athletes, obesity (or its absence) is frequently not diagnosed by the simple measurements of body weight and stature. There is good evidence that the caloric status of the athlete is best demonstrated by a consideration of his bodily composition. (Although clinical deficiency states obviously can be associated with impaired performance, such disorders have been excluded from consideration in this paper. The present discussion is concerned primarily with the problem of determining whether there is such a thing as an optimal diet for a given category of athletic performance.)

Carbohydrate: Most observers have noted that, when carbohydrate is readily available to tissues, it is used preferentially for muscular work. However, as reserves of carbohydrate diminish, increasingly more fat is metabolized. Accordingly, either carbohydrate or fat, or any combination of the two substrates, can provide fuel for muscular exercise. Krogh and Lindhard reported that, when subjects are on a high-carbohydrate diet, they show a higher net muscular efficiency than when they are on a high-fat–low-carbohydrate diet. Calculations based on respiratory calorimetry indicated that up to 9% greater expenditure of energy per unit of work occurs when fat is being burned (the respiratory quotient equals 0.7). The findings of Krogh and Lindhard were continued and confirmed in their laboratory by Bierring. However, as Gemmill has pointed out, these authors used a projected line to obtain the two extremes for their calculations. As actually determined, the highest respiratory quotient obtained was 0.93, when the work expenditure was 4.6 calories; the lowest respiratory quotient was 0.75, when the caloric output was 4.82. Accordingly, the actual difference between these two

measured points is 4.5%. March and Murlin were unable to distinguish any relation between efficiency and relative quantity of fat and carbohydrate in the diet when light work was performed but noted a decrease in efficiency on a diet high in fat after such a diet was continued for three or four days.

Haggard and Greenberg performed studies with the bicycle ergograph that led them to believe that a high carbohydrate intake increased muscular efficiency markedly and that an increase in the interval between meals was associated with a reduced efficiency. Other investigators have been unable to discover a beneficial effect of carbohydrate on performance. After reviewing the literature up to 1942 on the subject of the effect on efficiency of diets high in carbohydrate or fat, Gemmill concluded that muscular efficiency is practically the same on all diets. He states that there is a slight increase in efficiency after a high-carbohydrate diet, which probably does not exceed 5%.

In prolonged physical activity, a definite correlation can be observed between symptoms of fatigue and a decrease in blood sugar level. When glucose is administered under these circumstances, the symptoms disappear and the power to work is increased. Christensen and associates believe that the beneficial effect of administered glucose is a neurophysiological phenomenon and not due to a direct metabolic effect on muscle. Apparently the respiratory quotient can continue to fall (indicating increasing oxidation of fat) even while the level of blood glucose is rising and the symptoms of fatigue are being alleviated. In subjects studied for relatively short periods, Simonson and co-workers were unable to correlate visual fatigue with changes in blood sugar level. Apparently, fatigue is not necessarily accompanied by hypoglycemia, although hypoglycemia is frequently accompanied by fatigue.

Considerable literature has appeared concerning the effect of breakfast and its composition upon performance of work and emotional status. Tuttle and associates found that omission of breakfast affected adversely performance on the bicycle ergograph. Thorn, Quimby, and Clinton and others have observed that a breakfast high in protein has value in maintaining the blood glucose level and also a feeling of well-being. Yet, many of the effects of omission of a meal may result primarily from the sudden interruption of an established eating pattern. Studies on individuals who habitually omit breakfast might be more rewarding. Moreover, it would be inappropriate to apply results obtained in studies on industrial or clerical workers to athletic performances. Before an athletic event, the athlete may be in a psychological and physiological state not at all comparable to what might be anticipated under more casual circumstances.

Concerning dietary sugar and performance, the remarks of Abrahams seem pertinent.

> What of sugar, approbated as a readily available source of energy to be taken before a contest? It is conceivable that in a very protracted effort the reservoirs might be exhausted and hypoglycemia occur. But that a special sort of explosive material can be advantageously applied for a maximum effort I do not believe. It is perfectly true that I have given sugar with results that encourage the men to accord no little credit to its service. But the highly strung athlete is so suggestible that he will be powerfully influenced by anybody in whom he has confidence, in which case it is immaterial what he is given. I have been convinced of this psychological element with substances simpler than sugar and sometimes quite inert.

Haldi and co-workers have studied the effect of carbohydrate intake on physical performance, using the time taken to complete a 100-yd. swim as the index. When a high-carbohydrate meal was taken three hours before the swim, performance was not better than that after an isocaloric meal low in carbohydrate. Blood sugar concentrations were higher after a swim of this distance in all cases but were not affected by the composition of the preswim meal. Haldi and associates concluded that, in brief periods of very strenuous exercise, muscular efficiency is dependent upon the energy reserves and the training of the subject. The composition and size of the preexercise meal do not appear to play a significant role.

Although the preponderance of available evidence indicates that the composition of the preexercise meal does not affect efficiency during athletic events of brief duration, there appears to be little doubt that the capacity to endure prolonged muscular work is enhanced if carbohydrate stores are replete prior to the exercise period. Whether this favorable effect is due entirely to the maintenance of higher blood glucose levels or whether it can be explained in part by the slightly greater efficiency of muscular work when carbohydrate is the predominant fuel is not entirely clear. Christensen and others believe that, in the last few days before an athletic contest, heavy work should be avoided to allow for maximal filling of carbohydrate stores. However, more experimental work is needed before it can be stated with assurance that this belief is well founded.

Fat: There is no doubt that fat provides fuel for muscular work. In sustained exercise, when carbohydrate reserves diminish, the respiratory quotient falls, indicating that an increasing proportion of fat is being oxidized. However, fat seems to play a passive role in energy metabolism, in the sense that, when carbohydrate is available as a fuel for exercise, the respiratory quotient usually rises and the contribution of fat to energy metabolism diminishes in proportion. When exercise ceases, the respiratory quotient again falls to low levels, indicating that the metabolic mixture in the blood is largely composed of fat. In the diet of athletes (as in general), fat, at the metabolic level, acts as an indifferent source of energy. Beyond this, it makes no special contribution to muscular performance.

Protein: Since Zuntz and others have shown that protein is not metabolized in significant amounts during muscular exercise in the well-nourished person, it need be considered only briefly, as having an energy-releasing reaction. The importance of meat as a constituent of the diet of athletes has been much debated, but it would appear that an excess of meat at the training table probably has more psychological than physiological value. The requirement for protein is not significantly increased when exercise is performed, unless at the same time an increase in muscle mass is taking place.

Yamaji carefully studied protein metabolism in several students who were being subjected to a rigorous training program for approximately one month. He observed that as the training progressed the nitrogen balance became positive. When the regular diet, containing 1 to 1.5 gm. per kilogram of body weight of protein per day, was fed, retention of nitrogen was relatively small; however, when the protein content of the diet was increased to 2 gm. or more per kilogram of body weight per day, an increasing amount of nitrogen was retained. This investigator also followed changes in the reserve protein during training for heavy muscular work and found that early in training the hemoglobin and albumin contents of the blood decrease. The degree of decrease in these blood proteins and the rate of their recovery are apparently influenced by the amount of protein in the diet. The higher the dietary protein intake, the smaller is the decrease in hemoglobin and serum albumin levels at the beginning and the sooner the return to normal.

As a result of these findings, Yamaji has concluded that during training protein accumulates in muscles at the expense of blood proteins. He has recommended that, during training programs involving heavy muscular work, an excess of protein be consumed. Such a diet would help to prevent anemia and permit the muscle mass to increase in size more rapidly. If Yamaji's results can be confirmed, it would mean that hemoglobin synthesis does not necessarily take precedence over other protein requirements, as some studies have implied. In any event, it seems clear that determinations of nitrogen balance during periods of rigorous training indicate only whether a net catabolism or anabolism of protein is taking place.

Additional studies, including determination of body constituents, are needed to provide information about important internal changes in protein metabolism that may be taking place. The studies of Yamaji and his colleagues deserve to be carefully followed up in the United States, particularly with respect to changes in reserve or labile protein that may occur during conditioning periods in athletes who have been out of training for some time. If the athlete is a growing boy, he will need extra protein to meet this particular anabolic requirement, whether he is in training or not.

Vitamins: It is now widely recognized that many vitamins of the B group are important constituents of coenzymes that participate in the energy-releasing reactions for which carbohydrate and fat provide the major substrates. The specific vitamins known to be involved are thiamine (cocarboxylase), riboflavin (flavoprotein coenzymes), nicotinamide (diphosphopyridine nucleotide, or coenzyme 1, and triphosphopyridine nucleotide, or coenzyme 2), pantothenic acid (coenzyme A), and probably pyridoxine (codecarboxylase) and biotin (carbon dioxide–fixation coenzyme). The rationale for believing that vitamin supplements might significantly affect physical performance involves the assumption that subclinical vitamin deficiencies are not uncommon in apparently well-nourished persons or, failing this, that it is possible to supercharge the energy-producing reactions by providing an excess of vitamins.

Keys and his associates were unable to discover any benefit to performance of work or capacity from large daily supplements of the B vitamins given to soldiers maintained on ordinary U. S. Army garrison rations. In his review, Keys states that he has been unable to find convincing evidence that supplements of the B complex or vitamins C or E, separately or in combination, would enhance the physical performance of apparently well-nourished persons. Bourne has recommended a high vitamin intake for athletes on the ground that the requirement for certain vitamins may be enormously increased in strenuous exercise. Actually, there is very little evidence to suggest that the requirement for vitamins is appreciably increased during prolonged muscular work. At best, the requirement for certain vitamins may increase in direct arithmetic proportion to the increase in expenditure of energy. In spite of occasional reports of apparently beneficial effects of vitamin supplementation upon athletic performance, it remains to be demonstrated convincingly that supplementation of the diet of the athlete in training with vitamins of any sort has a beneficial effect on endurance, muscular efficiency, or coordination.

Electrolytes and Blood Acid-Base Balance: After brief periods of strenuous exercise, there occurs a marked increase in production of lactic acid by the working muscles. At the same time a moderate increase in production of pyruvic acid takes place. These values are greatest 5 to 15 minutes after such exercise but remain comparatively high during the balance of the recovery period. According to Christensen and coworkers, the rise in lactic acid brought about by work of definite severity becomes less for the subject in better training. However, there is no evidence that the trained subject can dispose of excess lactate more rapidly than the untrained person.

The mechanism of lactacidemia has already been discussed. However, since severe exercise is associated with an accumulation of large quantities of organic acids, alkalinizing procedures have been suggested as having possible value in relieving the fatigue of the athlete. Johnson and associates studied the effects of blood alkalinizers on the efficiency of runners and found that their running times were not shortened by such measures. Keys has concluded tentatively that such changes in the alkaline reserve that may be effected by dietary manipulation will have little influence on the ability of the normal person to perform muscular work.

When carbohydrate stores are depleted during prolonged strenuous exercise, a rise in blood level of ketones may be anticipated. According to Grollman and Phillips, the degree of ketonemia occurring under controlled dietary conditions during performance of a standard task involving muscular exertion varies directly with the degree of training of the individual performing the task. They postulate that the greater rise in levels of blood ketones in the trained individual may represent a more efficient pathway for fat metabolism under these circumstances. Grollman and Phillips also have suggested that accumulated ketone bodies may represent that portion of the oxygen debt not accounted for by lactacidemia. Incidentally, there appears to be no evidence that the mild to moderate ketonemia of exercise during a time of carbohydrate depletion is in any way deleterious.

Frequently, athletic contests are carried on during hot weather and are associated with excessive losses of sodium chloride and water from the skin. Obviously,

under these circumstances, replacement of salt and water is needed. Keys and associates have found that work capacity in heat is markedly reduced when salt is severely restricted, even when this does not involve heat cramps or heat hyperpyrexia. At least 2 to 3 gm. of sodium chloride must be replaced per liter of sweat lost. Salt tablets may be upsetting to the digestive tract, and many physicians have found a weak solution of sodium chloride to be better tolerated by the individual deficient in salt.

Calories and Body Weight: Ordinarily, the athlete will spontaneously ingest food in amounts adequate to maintain his weight. It is unusual for obesity to develop during a period of rigorous physical conditioning; however, if the training-table food is appetizing and also calorically concentrated and the training itself moderate, it is quite possible for the athlete to accumulate fat during the training period. If the athlete has allowed himself to gain fat intercurrently, he will tend to lose it during the training period. It is axiomatic that the athlete who decreases his total weight by losing excess fat will be a more efficient machine. Accordingly, for most forms of athletics, obesity, even to a mild degree, constitutes a mechanical handicap.

The development in Germany of a light, portable respirometer has made possible the convenient collection of fairly accurate information about the caloric cost of different kinds of athletic activity. In assessing the nutritional needs of athletes, it is clearly important to obtain reliable information about the calories expended by the athlete in the performance of his particular event or events. Passmore and Durnin have carefully reviewed much of the recent information on the subject of expenditure of energy of man. They have recorded figures for the energy costs of different sports expressed as calories per minute. For example, they note that skiing at moderate speed on level, hard snow involves a significantly greater energy cost than swimming the crawl at a rate of 55 yd. per minute. On the basis of quantitative information of this sort, it should be possible to obtain a better understanding of the caloric needs associated with a variety of sports.

As a result of application of dilution and densitometric methods, considerable information has been gathered concerning the body composition of athletes. Welham and Behnke studied 25 athletes and found that, on the basis of standard height-weight tables of the type used by the insurance companies and the military services, 17 fell into the overweight category. When these investigators performed determinations of specific gravity on the 17 subjects who, by conventional standards, would have been classified as obese, they discovered that 11 of the group possessed high corporeal specific gravity. This indicated that these particular "overweight" subjects actually had a relatively low content of body fat and a proportionately increased lean body mass. On the basis of these findings, the authors have proposed that overweight should be defined in terms of the specific gravity of the body mass, with a tentative dividing line at the value 1.060 (specific gravity) between the obese and nonobese categories.

If the conventional criterion of desirable weight, based on relationship between height and weight (modified by age), is used uncritically as a guide, it is conceivable that a number of lean athletes might be placed on reducing diets in the mistaken belief that they were obese. Such a procedure could only impair the athletes' ability to perform. Thus, in the assessment of the caloric status of athletes, it would seem particularly important to use criteria supplementary to the simple determination of body weight, such as the difference between circumferential measurement of chest and abdomen and the measurement of thickness of skin fold with appropriate calipers.

Summary

Ability to perform well in an athletic event depends primarily upon the skilled and coordinated use of a well-endowed and properly conditioned body; however, psychological factors such as motivation may be important in determining whether the athlete will win or lose a contest. Awareness on the part of the athlete of having regularly consumed an appetizing diet of wholesome foods at the training table is one of a number of factors that can have a favorable effect on his morale. A preevent supplement or meal taken in the belief that it will provide extra energy and thereby enhance performance also may have a beneficial psychological effect. Therefore, by affecting the psychology of the athlete, the training diet and the preevent meal can affect his performance. Since the athlete frequently experiences considerable nervous tension (with its digestive consequences) on the day of a contest, the preevent meal should consist of tried and true foods of a highly digestible nature taken some three or four hours prior to the event.

There is no evidence that the diet immediately prior to a short-term athletic event can be manipulated in such a way as to improve performance. In longer events requiring sustained muscular work, there is considerable drain upon the carbohydrate stores and a falling blood glucose level may be associated with marked fatigue. Accordingly, the degree to which carbohydrate stores are filled may affect endurance. A small increase in muscular efficiency is believed by some investigators to occur when carbohydrate rather than fat is the predominant fuel for muscular work. Whether such an increased efficiency can significantly influence athletic performance remains to be determined. In any event, it seems desirable to prepare athletes participating in contests requiring endurance with diets that will ensure maximal filling of carbohydrate stores prior to the event.

The trained athlete requires no extra protein; however, there is evidence that during rigorous training the diet should contain liberal quantities of protein in order to permit the muscle mass to increase rapidly and without cost to labile protein sources elsewhere in the body. Supplementary vitamins probably are not needed in the nutritional program of the athlete who is consuming a nutritious diet. A slight sodium deficiency can impair athletic performance before any clinical signs of sodium lack are discernible. There-

fore, during hot weather, adequate amounts of salt and water should be given to replace losses of these substances through the skin. Excess body fat can be an important mechanical handicap for the athlete; yet, caution must be exercised in diagnosing obesity in the athlete who is merely overweight in terms of the standard height-weight tables. Many "overweight" athletes are not actually obese and, for this reason, more informative measurements than those of weight and stature should be made when the athlete's caloric status is being assessed.

Although there is considerable doubt whether manipulation of an adequate diet can enhance performance, there is no doubt whatever that performance can be significantly impaired when a less than adequate diet is consumed. The best diet for the athlete is one he enjoys and one that, at the same time, provides a variety of nutritious foods in amounts adequate to maintain his weight at an optimal level.

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Because of space limitations, a bibliography has been omitted from THE JOURNAL and will appear in the authors' reprints.

PREVENTION OF INJURY IN ATHLETICS

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• During the 1955 football season, nine deaths were recorded throughout the course of play. This alone shows the need for an active program concerning the prevention of athletic injuries. As a prerequisite to such a program, accurate statistics must be obtained to show types of injuries and rate per exposure for all sports.

A preventive program must include a thorough preseason physical examination, with special emphasis on the history of prior injuries that the examinee might try to hide. There should then follow a period of physical conditioning under close medical observation, no matter what the sport or competition. The physician's responsibility, after all means of prevention have been utilized, lies notably in the immediate diagnosis, treatment, and prognosis of injuries sustained and in averting further aggravation of minor trauma. This is not the duty of the coach or trainer.

Closer medical supervision of athletics, perhaps with a program similar to that practiced by industry and the insurance companies for the protection of the worker, may be the means of reduction of athletic injuries.

Prevention of injury in industry has recently been brought to the attention of our reading public by James P. Mitchell, Secretary of Labor.[1] Information concerning the year 1955 reveals that on-the-job injuries and deaths involved 1,935,000 workers, with an economic loss calculated at 3.5 billion dollars. In spite of these appalling figures, we are informed that the disability injury rate per million hours worked has declined, from 20 in 1943 to 11.9 in 1954. In contrast with this organized effort of industry and of insurance companies to make all workers conscious of injury by specific training in accident prevention, one can observe little organized endeavor on the part of coaches, trainers, and others in the field of sports to institute training programs along the same lines. Sporadic changes in rules and regulations such as those pertaining to equipment and padding have partially benefited the safety of the game, but enforcement has been lax. Even the sports-loving spectator is stimulated to action when a good brawl is taking place on the ice or on the playing field. Of course, such brawls should not exist, according to the rules and regulations. "Baiting" the umpire by coach and/or player is often tolerated in our popular game of baseball.

Statistics on Injuries

Until such time as accurate statistical material concerning all sports and the number of regular participants is available, it will not be possible to ascertain the true incidence of injury per exposure in any one sport. Since 1931 the American Football Coaches Association[2] has made statistical reports on the fatalities of football. However, in this popular sport many disabilities occur that do not result in death but require treatment and absence from practice or games. A great need exists for an accurate tabulation on a national scale of all injuries resulting in disability for more than one day incurred in each sport. The problem of obtaining the necessary data for compilation is one of organization. Except for those of isolated educational institutions, such reports are now unobtainable. The American College Health Association, in cooperation with the National Safety Council, has attempted such a study but could obtain cooperation from only 11 colleges the first year and 9 the second year.[3] Reports in medical literature on the subject of athletic injuries are varied and usually concern particular types of injury. The information sought requires reports covering all professional sports and collegiate and high school athletics with formal, extramural competition. Basketball, baseball, football, soccer, lacrosse, boxing, and wrestling should be included in these reports. Such a large base for statistical compilation would furnish data of great value to those interested in the reduction of the incidence of injury in sports competition. I believe that the current incidence of injury is too high and should and can be reduced.

Need for Cooperative Effort

Our larger universities are interested in reducing the incidence of injuries in intercollegiate sports, as are the larger professional leagues in baseball, basketball, football, and ice hockey. However, due to a feeling of independence on the part of those in professional and amateur competition, too few have undertaken cooperative endeavor really aimed to benefit all competitors. Such an attitude has probably arisen as a result

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of the American definition of the amateur athlete. There has been much eyebrow-lifting over the international competition in the Winter Olympics in 1956, when those nations behind the Iron Curtain carried away most of the championships. Relying upon a fixed definition of qualifications for amateur competition, the Western sports world must examine its own code of amateurism. When does an athlete retain his true amateur status today? Whether amateur or professional, however, everyone interested in sports is interested in a program to reduce the incidence of injury and of fatality in sports. One is little cognizant of the facts. Is it realized that in the 1955 football season there were recorded nine deaths during play in American football and one death in the relatively harmless "touch" football?[2] In 1951 Gonzales[4] reported on deaths from sports; these data were derived from the files of the medical examiner's office in New York City covering 32 years, as follows: baseball, 43; football, 22; boxing, 21; and basketball, 7. Whatever program is adopted to reduce the incidence of injuries in sports will require deep thought and cooperation from all sides of the field: the professional, the amateur, the schools, and those responsible for sports in public and private playgrounds. The Metropolitan Life Insurance Company[5] has reported an astounding number of fatalities from sports injuries among its industrial policyholders, even in casual sports competition for fun (three fatalities in golf in two years). The medical interest in any program to prevent injury transcends any boundary, national or international, amateur or professional, sand-lot or organized.

Program for Prevention

Any suggested program on prevention of sports injuries begins with the compulsory preseason physical examination of all competitors. The physical examinations and medical history should emphasize prior injury and its sequelae, if any; vision; teeth and dentures; the heart and cardiovascular system; the respiratory system; the excretory system; and the musculoskeletal system. The examiner should look for the presence of large postoperative scars or any congenital or acquired abnormalities. A history of prior sprain of a ligament, strain of a muscle or tendon, or fracture is of great importance. Protective strapping has been demonstrated as useful in reducing the incidence of recurrent sprains and strains.[6] Many eager competitors like to hide the earlier injury, and the examing physician must be alert to note anything of this nature at the earliest possible moment. Cerebral concussion is occurring more frequently in the medical histories of the entering freshman athletes. It is often the result of an automobile accident rather than an accident on the playing field. A history of multiple concussions in a would-be college athlete interested in body-contact sports, when there has been loss of consciousness on three occasions, in our code automatically prevents him from entering competition and necessitates a detailed examination and consultation with the neurosurgical consultant. When the above-described physical examination uncovers only a marked abnormality of vision, the services of a consultant in ophthalmology are required. When there is correctible defective vision, contact lenses are ideal for those who can tolerate the prosthesis during exercise. In my experience, only a small minority of athletes can be comfortably fitted. When the physical examination is completed by the physician, the findings are reviewed by a higher authority on the medical staff and a complete list of approved candidates forwarded to the team surgeon, the team manager, and the team coach. No unapproved candidate can obtain a uniform.

After his acceptance as physically fit for a sport, the candidate reports to the squad and comes under the surveillance of the coach and training personnel. The fundamental training period is vital to the development of talent and technical and physical skills in all team sports. Actually more than the development of skill and talent is achieved through practice and drill. A physical conditioning is derived. No matter what sport may be considered or what game is played, certain fundamentals are required—in the basic knowledge of the sport, in the more advanced plays, in defensive maneuvers, or in offensive chance plays by which a temporary advantage is seized to gain or to score. In addition to the technical knowledge of the game and its rules, the physical strength to outlast opponents has more than once proved the winning factor in many a close contest. The coach and the trainer sense the quality of physical fitness and team cohesion as any season of sport proceeds.

One of the most difficult factors to deal with in a squad is the problem of overtraining. This is largely a problem of individual reaction, and one key man in the team can slow or upset the entire squad. Overtraining is a contagious affair that seems to travel unnoticed by squad members at the time, but a keen coach with an eye to individual members of his squad can spot and call it. It is better described, perhaps, as an unrecognized attempt to perfect some technical maneuver of a game to too ultimate a goal. Try as one may, the goal becomes succeedingly more impossible. However, the solution to this problem lies in more natural attempts, without trying too hard. Overtraining is largely mental weariness. Regardless of what sport may be concerned, one sees this. It is a bugbear of the coaching staff that the more experienced recognize early. The great problem of the coaching staff of any team, whether professional or amateur, is to develop the squad through graduated physical exercise and gradual technical training in offensive and defensive play, so that at the climax of the season, whether the goal be a world championship or a league championship, the squad has progressed to meet the challenge all the way through the competitive schedule. In the various professional, intercollegiate conference, and other leagues, the nervous tension felt during the sports seasons has reached a high level that 50 years ago would have been inconceivable.

The coach and training staffs do contribute to the program for prevention of injuries by teaching applicable techniques, particularly those related to defensive play in competitive sports. A very important detail pertains to the perfection of timing of team play in body-contact sports, in both offensive and defensive maneuvers. Lack of perfection in timing can produce uncalled-for injury; lack of proper execution of a play by one member of the team may result in unintended exposure of a teammate to uncalculated

risk; and, unless alertness by team members to this potential risk is emphasized during squad drill or practice, a major source of the incidence of injury has been overlooked. All good coaches appreciate the necessity of squad drills in timing in complicated offensive and defensive play in all body-contact sports.

Another factor must be considered in prevention: the medical staff's responsibility for early recognition of injury to a member of the squad. Much has been written on the importance of early recognition of injury, the prompt removal of the player from the game, and the application of therapeutic measures, so that a minor sprain or strain may not become a major disability. Since the coach's main interest is in the technical perfection of team and position play, he should not be required to spot a limping or arm-weary player. The problems pertaining to minor injury should be the responsibility of the medical observer. Those of us trained in the process of observation for such details can perfect our visual sense so as to spot the milder type of injury before the player himself exhibits the aggravated symptoms. Time out for examination often prevents a seriously disabling injury. However, the acceptance of such responsibility might bring an overbearing interference with squad training if reasonable restraint were not exercised.

type of rigid padding used on a particular part of the body where it might be utilized as an offensive weapon. They act similarly with regard to stationary equipment. The rules of boxing were recently changed to require a new type of floor matting in the boxing ring, which has materially altered the incidence of serious head injuries.[8]

Likewise, some years ago the American football rules committee moved the location of the goal posts back 10 yards to avert possible injury to players. However, in my opinion, the number of serious body injuries caused by impact against these goal posts located on the goal line was not significant; in professional football in the United States and in Canada the posts are still maintained on the goal line. However, nobody can deny that all are interested in reducing the incidence of injury from body contact. Painstaking research on the plastic football helmet and its proper suspension is now being done at Cornell University, Ithaca, N. Y., and the University of Southern California, Los Angeles. One hopefully looks forward to the ideal design and a reduction in the incidence of cerebral concussion.

In body-contact sports today, more responsibility has been placed on contest officials. In baseball and football the number of officials has been increased,

TABLE 1.—*Incidence of Sprains and Length of Disability Incurred in Sports at Harvard University*

	Ankle Sprains, No.		Disability Days		Knee Sprains, No.		Disability Days	
Sport	1946-1947	1953-1954	1946-1947	1953-1954	1946-1947	1953-1954	1946-1947	1953-1954
Varsity football	7	2	55	35	4	5	34	46
Jr. varsity football	7	3	96	15	5	4	71	41*
Intramural football	12	1	75	30	9	3	139	58
Totals	26	6	226	80	18	12	244	145
Av.			8.69	13.33			13.56	12.08

As I have seen sprains unnecessarily produced because of certain irregularities in the playing surface, I wish to point out that this danger, particularly in sand-lot competition, has even resulted in fatalities. Improvement in the floor surface of the boxing ring, as a result of changes in rules, has reduced the number of head injuries incident to that sport. In the Eastwood report[2] of fatalities directly caused by football for the 1955 season, 20% were in sand-lot competition. Those responsible for maintenance of grounds must remain alert to the potential dangers of uneven playing surfaces.

Responsibility of Rules Committees and Officials

In October, 1955, the lay press[7] emphasized that the great American football game was developing into a game in which the protective equipment worn by the players might be becoming too heavy and/or too rigid. One could interpret this as suggesting that a player might use his equipment to take advantage of his opponent, offensively or defensively. There is no question that the intent in the designing and developing of new protective equipment is to protect the individual wearer against injury. The various sports rules committees have regulated the hardness of padding that may be worn over certain parts of the body and are always alert to legislate against a particular

with the idea of better coverage of all facets of a complicated, technical game. The rules and regulations of all games are complex, but those with a number of players scattered over the field require wider fields of vision than are needed in the boxing or wrestling ring. Nonenforcement of the rules of the game spoils the sport, and, in some sports, the sole official may have too great a responsibility. It is a great tragedy to report that in 1956, in a freshman preparatory school wrestling bout in Springfield, Mass., one contestant sustained a fracture of the sixth cervical vertebra and a transected spinal cord. In intercollegiate football too many fouls or infractions of the rules seem to go unnoticed. It is distressing to see in this game so many instances of broken or displaced teeth, often occurring in line play. Perhaps the fault lies in the rules, but perhaps it is the laxity in officiating.

Physician's Responsibility

The purely medical prerogative is the diagnosis, treatment, and prognosis of all individual injuries once sustained. In addition, the prerogative pertaining to the prevention or aggravation of minor injury belongs to the medical staff. No one can deny that progress has been made in reducing the days of disability from athletic injuries. Table 1 demonstrates significantly the results of early, prompt treatment. Physicians,

trainers, and coaches are all concerned with the individual player and his welfare. The permitting of a player with cerebral concussion to continue play should not be tolerated. Even the player who is exhausted physically and physiologically is more prone to injury if permitted to continue.

A player not mentally or physically capable of carrying out his assignments is of less value to a team than a fresh substitute. Every follower of body-contact sports can recall having seen some player allowed to continue in a rugged contest without full capacity of his mental processes. In the high school leagues particularly, there is lack of adequate medical supervision of practice sessions of contact sports. The responsibility lies in the community schools' committees. According to Eastwood's report [2] of the nine football fatalities in 1955 that were a direct result of competition, six were deaths of high school players. It is unfair to a coach not to provide him with adequate medical assistance. Even though the majority of injuries sustained are not serious, nobody can prophesy when a serious accident might occur.

The team physician must grasp the opportunity to determine whether a limping player should be taken out of competition. He should arrange with the team captain to call time out for any needed examination. He should be familiar with the functional testing of joints, the more common sites of fracture, and the simpler tests for diagnosis of type of injury. In instances of head injuries, he should be alert and ask the player simple questions in order to determine whether there is amnesia, with no orientation of time and place. If necessary the physician could call upon the team captain to interrogate the injured player in order to determine whether the player knew his particular assignment in an individual play signal. When an arm or leg is involved, comparative tests of the normal side and the injured side are simple and very practical.

TABLE 2.—*Types of Injuries Incurred Most Commonly in Sports at Harvard University*

Injury	1932-1937	1937-1942	1942-1947*	1947-1952	1952-1954	Totals
Sprains	636	426	210	344	86	1,702
Strains	363	287	96	145	53	944
Contusions, joint	219	73	87	52	17	448
Contusions, muscle	526	350	111	60	18	1,065
Contusions, simple	281	93	103	97	22	596
Fractures and dislocations	223	232	105	181	47	788
Lacerations and abrasions	264	89	25	40	6	424
Inflammations and infections	300	121	66	48	9	554
Internal injuries	102	81	39	115	26	363
Miscellaneous	243	152	67	42	6	510
Totals	3,157	1,914	909	1,124	290	7,394

* From fall, 1943, until spring, 1946, the sports were on a wartime basis, with organized sports continued only informally and on a limited scale.

Once the injury is located and diagnosed, its severity or degree is the important decision to make. Will continued play turn a sprain from grade 1 into grade 2 or grade 3? In many instances one cannot determine the degree of injury until 24 hours later. The player should be protected from a possibly long disability period. There is no reason, from the pathological point of view, to think that a sprained ligament can be supported by adhesive strapping, so that the player can be returned immediately to play, without doing irreparable harm to the injured ligament. The torn ligament must heal, and one cannot put stress on it until the healing process is complete, and then only with daily supportive adhesive strapping. It will never again be as strong, since there will be fibrous scarring. The too early return to play of a player with a healing sprained ligament can undo good results of the partial healing process. The team physician must determine when the lesion has healed and the player is ready to return to play. He must realize that, if a player still limps, an ankle sprain is incompletely healed and that, regardless of the amount of adhesive tape applied, the player cannot yet withstand the stress of running and dodging.

TABLE 3.—*Body Distribution of Injuries Incurred in Sports at Harvard University*

Region	1932-1937	1937-1942	1942-1947	1947-1954*	Totals
Abdomen	18	10	1	8	37
Achilles tendon	31	5	3	4	43
Ankles	344	200	125	226	895
Arms	38	35	12	15	100
Back	87	57	5	32	181
Buttocks	29	10	0	3	42
Calves	147	91	48	14	300
Chest	75	48	55	35	213
Crotch	27	0	0	1	28
Elbows	53	38	21	12	124
Face	228	122	44	48	442
Feet	187	68	39	45	339
Groins	114	108	39	21	282
Hands	288	109	55	41	493
Head	182	109	71	140	502
Heels	32	8	2	3	45
Hips	58	26	0	4	88
Knees	496	301	137	273	1,137
Iliac crest	30	29	24	28	111
Neck	20	14	1	11	46
Shins	54	16	7	60	137
Shoulders	212	180	64	129	584
Teeth	14	1	0	11	26
Thighs	416	240	113	142	911
Throat	11	6	6	15	38
Viscera	35	42	16	12	105
Wrists	51	32	21	31	135
Totals	3,207	1,914	969	1,364	7,394

* 7-yr. period; other periods are 5 yr.

Diagnosis and Treatment of Common Injuries

The team physician should become familiar with the more common types of injuries produced in athletics and likewise the more commonly injured parts of the body. Tables 2 and 3 illustrate my own experience. Alertness on the part of the trainer and team physician and recognition of the more serious and less common injuries is a "must" in organized sports. In most body-contact sports, there is a time limit of three minutes in which the one responsible for diagnosis and prognosis must decide whether an injury is of sufficient degree to require the player to leave the field.

Sprains, strains, and contusions account for over 60% of the injuries sustained in competitive athletics (table 2). A full knowledge and understanding of the pathology [9] of such lesions is necessary for all team physicians. Diagnosis and prompt institution of appropriate treatment are the key to a reduction in the

disability period. The immediate recognition of a fracture, dislocation, or injury to a viscus is essential to those who administer to the injured during competition. In a sprain the lesion is in ligamentous tissue, in a strain it is in muscle or tendon tissue, while a contusion may involve any tissue, even that of viscera. The sprain is produced by external force, whether by contact with the ground or floor surface or by the stress produced by an opponent in making body contact. The strain, on the other hand, is usually produced without the violence of an external force but rather by an internal stress or strain or by muscle tone imbalance and is best exemplified by the sprinter's "pulled" hamstring.

A review of the pathology and tissue repair in sprains, strains, and contusions may be desirable. It is of great importance to identify the specific tissues involved, the tissue vascularity, and the specific location, whether the injury is in the middle third of a ligament or muscle or at or near its attachment to bone. Tendon, muscle, and ligamentous tissue are highly specialized tissues, and, when torn or contused, they or their areolar, or interstitial, substances are likewise damaged. It is to the advantage of those providing treatment to minimize the amount of hemorrhage and hematoma or hemarthrosis. The greater the resulting local accumulation of the products of hematoma, the greater will be the fibrous scarring in the highly specialized tissue. This scar will always remain as a weak spot in these tissues, and, after a ligament has healed, the joint will never be as stable as before. Once a hamstring tendon has been strained or pulled, the muscle will never function as before, and, furthermore, it will be shortened by the fibrous scarring. Therefore, it is to the advantage of all team physicians to apply measures promptly to limit the amount of hemorrhage and the formation of hematoma, in order to prevent excessive fibrous scar in these specialized tissues. The regeneration of muscle, tendon, and ligamentous tissue does not take place in the natural process of repair of these highly specialized structures. Roughly, hemorrhage, formation of a hematoma, absorption of the hematoma, and repair by fibrous tissue represent the various stages of pathology in tissue repair.

The therapeutic measures vary, depending upon at which stage in the pathology the patient is being treated. For the best results, treatment should be started at the time of injury, and the measures instituted should provide control of the hemorrhage. Since most of these lesions are relatively near the body surface, the injured areas are accessible and will benefit from the application of cold and a sponge-rubber compression bandage for one-half hour. In applying such measures one should use sheet wadding, a 1-in. thick piece of sponge rubber cut to fit the injured area, and an elastic bandage with light tension. In addition, I prefer to use a cold-water medium (cakes of ice floating in a cold whirlpool bath) for a full half-hour. At this stage, rest of the injured part is essential and no weight-bearing or motion should be tolerated. After the cold bath, a dry sponge-rubber compression bandage should replace the first bandage. Rest of the injured part is essential to limit the chance of further hemorrhage, and crutches or a sling should be used. The specific treatment outlined saves much time in total convalescence and recovery, minimizes the size of the hemorrhage, and reduces the size of the fibrous scarring. To be most effective, the therapeutic measures must be instituted within a very few minutes of injury.

The day after the institution of therapy is an important milestone. If the earlier treatment has been effective, upon removal of the compression sponge-rubber bandage, very moderate or even no swelling will be noted. It is rare, indeed, that one ever sees hemarthrosis of the knee from a sprained medial collateral ligament when treated as described. The physician should at this time remove the bandage to confirm the diagnosis, using finger-point tenderness to localize the lesion and to determine its severity, reapply a sponge-rubber compression bandage, and advise the patient to continue resting the injured part by using crutches or a sling and to keep the injured part elevated as much of the time as possible. If therapeutic measures aimed at absorbing the waste products of hemorrhage are started too early, there is always a danger of further hemorrhage. It is, therefore, advisable to delay the institution of such measures 48 hours.

The second stage of treatment should be begun when one is certain that further hemorrhage will not be a factor. Usually at the third visit, the bandage is removed and ecchymosis is looked for at the edge of where the sponge-rubber pad had been applied. This signifies that the compression has been effective in bringing the hemorrhage originating in the deeper tissues to the surface of the skin, where it can be more effectively treated and absorbed by the application of measures that will hasten the absorption of the waste products of hemorrhage and hematoma. With these elements removed from the area of the actual lesion, the size of the actual fibrous scar is minimized. What additional agents for the dissipation of hemorrhage that are useful in collagen metabolism have come to light? The enzyme hyaluronidase and the hormone hydrocortisone have been injected locally. At present time, their administration in case of muscular contusions seems to be beneficial. However, in sprains of ligaments, it has not, in my experience, produced the hoped for results. It seems advisable in sprains of ligaments to delay institution of local enzyme and hormone therapy until 24 or 48 hours after the injury. My experience suggests that, given too early, such treatment may increase the amount of hemorrhage.

At the start of this second stage of treatment, the application of heat is of paramount importance. To be most effective, the heat must reach a large area and stimulate lymphatic absorption in an entire extremity. Application of heat to the local lesion will not produce the desired absorption of the hematoma. The same may be said of effleurage, or stroking massage, which should be applied so that its effect reaches the entire chain of lymphatic vessels. At first, the massage is applied, not on the lesion itself, but around it and caudad. Later the area of the lesion can be massaged.

The compression sponge-rubber bandage is reapplied after each treatment, and the patient gradually resumes weight-bearing, at first with a cane or, in the upper extremity, with the removal of the sling. Treatment with heat and massage once a day is sufficient and should never include more than 20 minutes of whirlpool therapy and 10 minutes of massage, starting with 5 minutes of each. Definite harm results from overtreatment. One precaution is necessary in massage when there is contusion of deep muscles—avoid the area of the lesion. Many cases of myositis ossificans traumatica are aggravated by direct massage. This second stage of treatment should be continued until full function returns, adding progressive resistance exercise according to the Watkins and DeLorme table [10] as tolerated. Not until full function is restored and tests on the field reveal no evidence of disability is the patient discharged, and then he is allowed to play only with proper protective strapping and padding applied to prevent recurrence.

In any intensive program designed to prevent injury, it is essential to protect all sprains and strains from recurrent trauma. The team physician must be familiar with the fact that all such injuries are prone to recur, since the pathology and tissue repair in an injury leaves a fibrous scar across a highly specialized tissue, a weak spot. Familiarity with the better types of protective equipment used in sports and with the various methods of application of protective strapping, with use of adhesive plaster, is a "must" for every team physician and trainer. A typical strapping for a

Fig. 1.—Diagram showing completed strapping for sprained ankle. Numbers indicate order in which straps have been applied.

sprained ankle is shown in figure 1 and the checkrein strapping for a sprinter's pulled hamstring tendon in figure 2*A*. That for a sprained knee is illustrated in figure 2*B*. Such strappings are to be applied daily in competitive body-contact sports for the practice or game period only, the skin having first been cleared of hair and painted with some tacky nonallergic solution.

Summary and Conclusions

In conclusion, it is evident that much can be accomplished in the reduction in the incidence of athletic injuries by insistence on more adequate medical coverage of practice and game participation, particularly in the contact sports, whether professional, intercollegiate, interscholastic, or sand-lot, on public or pri-

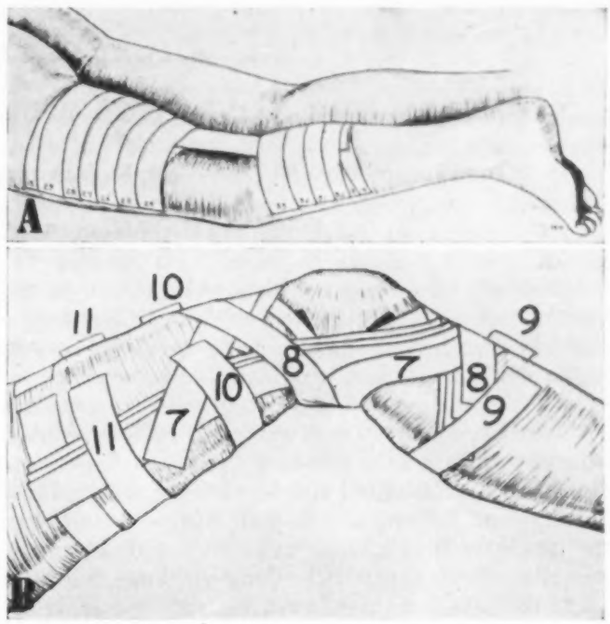

Fig. 2.—Diagrams of, A, checkrein strapping for pulled hamstring and, *B*, typical strapping for sprained knee. Numbers indicate order in which straps have been applied.

vate playground. The required history of injury and physical examination of all contestants at the start of the season and the resulting provision of protective measures taken against the potential recurrent injury of a sprain or strain will reduce the incidence of injuries each season. The coaches can and do contribute to this reduction by developing in team play, both in offense and in defense, techniques for players to utilize that prevent undue exposure of vulnerable parts of the body. The team physician's prerogatives of early diagnosis and treatment must not be usurped by coach or trainer, lest a minor injury become aggravated by continued play, causing a long period of disability. Similarly the determination of the time of return of an injured player to play remains in the medical field. In order that the true incidence of sports injuries be recognized, it is recommended that a method of recording injuries on a national scale be devised, preferably through the National Collegiate Athletic Association. I believe that the true incidence is too high and that much can be accomplished to reduce it to reasonable levels through changes in the rules and regulations of the game, through better enforcement of the existing rules, and through better supervision of high school and sand-lot playground competition.

15 Holyoke St. (38).

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STUDY OF THE LONGEVITY AND MORBIDITY OF COLLEGE ATHLETES

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• When 629 athletes were compared with 583 nonathletes with approximately the same college environment, there appeared to be no significant difference in life expectancy, cause of death, or the type of death. The criterion of being called an athlete in this survey was to have been a varsity-letter winner. This particular study is in agreement with other recent studies of a similar nature.

The effects of intensive athletic competition on the heart and other organs and on bodily resistance to disease has long been a subject of controversy. Previous to the work of Morgan [1] in 1873, the viewpoint prevailing in England was that competitive oarsmen did not live beyond 50 years of age and that this reduced longevity was directly caused by athletic competition. The studies of Morgan [1] and Meylan [2] in 1904 refuted this concept. Attempting to gain further insight into the longevity of athletes, Anderson [3] and Greenway and Hiscock [4] compared the longevity and causes of death of Yale University athletes with use of insurance tables. Dublin,[5] Knoll,[6] Hartley and Llewellyn,[7] and Wakefield [8] similarly compared their data on athletes with insurance company or general population statistics. Bickert,[9] Van Mervennée,[10] and Schmid [11] added to the body of information available on the longevity and morbidity of athletes but presented no control data. Hartley and Llewellyn [7] point out that athletes are a select group and that, therefore, comparisons with data of life insurance company tables are open to serious criticisms. Dublin [5] stated that a comparison of athletes with their classmates might yield more valid information.

Dublin's [12] second study in 1932 and Rook's [13] work in 1954 represent perhaps the best analyses in the literature on the longevity and causes of death among athletes and nonathletes. Dublin's results show the expectation of life in years at age 22 for honor men (47.73) to be greater than for either the average graduate (45.71) or the athlete (45.56). All college groups, however, showed greater life expectation at age 22 than was listed in tables covering the period 1900-1915 for American men (44.29) or was given for American white males listed in the 27 registration states of the United States for 1919-1920 (43.35). Rook's results as to longevity varied from Dublin's, in that the average age of sportsmen at death (67.97) exceeded that of the randomly selected group (67.43) in his study. The intellectual group again, however, had the greatest longevity (69.41). In all studies in which causes of death were investigated, deaths by external violence among athletes markedly exceeded those among controls. Typically, Wakefield [8] in 1944 found 34% of all deaths among former basketball players were due to external violence, as compared with 17.3% for the general population of the state of Indiana. Rook found the death rate due to external violence to be 97.9 per thousand for sportsmen, as compared with rates of 46.7 for intellectuals, and 70.4 for his random group.

The results of studies regarding comparative rates of death due to cardiovascular causes do not indicate clear trends. In Rook's [13] study for instance, 27.3% of the deaths before age 65 among controls were due to cardiovascular conditions, as compared to 22.5% among sportsmen. Wakefield's [8] results, on the other hand, showed 25% of all deaths caused by disease to be due to cardiovascular-renal diseases, as compared to only 16% for the general population of Indiana. Dublin's [5] results in 1928 showed that, of all deaths among athletes over 45 years of age, 32% were due to heart disease, as compared with a rate of about 20% of the total deaths among insured groups from this cause.

Present Study

The present study was undertaken as a pilot study of the larger national research project inaugurated in 1951 and sponsored by the physical education honorary fraternity, Phi Epsilon Kappa. Questionnaires prepared by a national study committee were sent out to 1,130 former athletes and 1,130 others not former athletes, individually matched as to years of attendance at Michigan State University and ranging in dates of birth from 1855 to 1919. (For purposes of this study, athlete is defined as a letter winner in a varsity sport.) Of the 2,260 questionnaires sent out, 1,212

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were returned with sufficient information to be included. Six hundred twenty-nine, or 55.66%, of the questionnaires sent to athletes were returned, as were 583, or 51.59%, of those sent to the control group. The distribution of returns by year of birth shown in figure 1 would seem to indicate that comparisons are justified

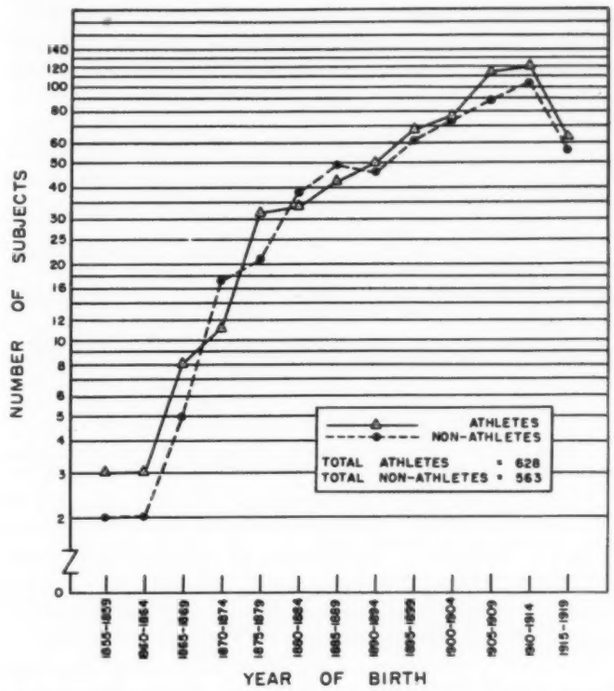

Fig. 1.—Distribution of years of birth of athletes and nonathletes included in study.

with respect to longevity or causes of death. Data from the questionnaires were tabulated, punched onto IBM cards, and analyzed, insofar as possible by IBM techniques. The data have been statistically analyzed where appropriate (tables 1 and 2). One hundred twenty-three, or 9.85%, of the total returned questionnaires were for deceased subjects, of whom 67 were

TABLE 1.—*Comparison of Athletes and Nonathletes, by Selected Characteristics*

Characteristic	Athletes, %	Nonathletes, %
Service in armed forces*	66.4	55.8
Branch of service*		
Army	70.1	82.7
Navy	23.2	13.9
Marine Corps	2.8	...
Other	3.9	3.4
Activity in service		
Mild	13.7	18.9
Moderate	50.4	53.9
Vigorous	35.9	27.2
Married	96.9	97.0
Drinker*	77.6	66.5
Smoker*	68.7	60.2
Weight in college*	164 lb.	153 lb.
Weight gain since college	9.7 lb.	10.4 lb.

* These differences are statistically significant, i. e., it is unreasonable that chance would account for them.

athletes and 56 controls. Since this was a questionnaire study and, hence, subject to response error, particularly with regard to cause of death, it was decided to determine the validity of the responses. Therefore, data from the death certificates were obtained in 104 cases. List B of the "Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death" [14] was used for the classification of the causes of death. Errors in the causes of death were classified as major, minor, and those of insufficient information. A major error was listed when the questionnaire response was not pathologically related to the cause of death on the death certificate. A minor error indicated that the response and the actual cause were related pathologically although classified differently in the international classification.

The validation results, in which the data from death certificates and the questionnaires were compared, were as follows: 1. In dates of birth, agreement was very good. Only 10 discrepancies were noted, with a mean error of 0.35 years, which was not statistically significant. 2. In ages at death, agreement was good. Twenty-two discrepancies were noted, with a mean error of 0.32 years, which also was not statistically significant. 3. Nineteen discrepancies were noted in causes of death. Two were major errors, 13 minor errors, and 4 were cases in which insufficient information was available to make a decision. Most of the errors noted concerned cardiovascular causes, particularly heart disease. While the layman is apparently oriented to the term heart disease, the death certificate might list the cause of death as coronary thrombosis or angina pectoris, which technically, for classification purposes, is erroneous. Because of this,

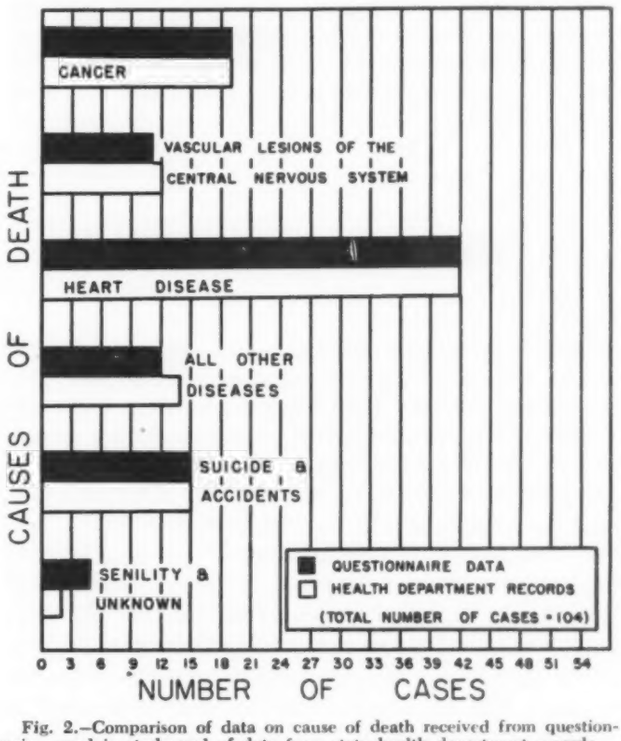

Fig. 2.—Comparison of data on cause of death received from questionnaires used in study and of data from state health department records.

fine classifications of causes of death from conditions of the cardiovascular area were not possible. Coarse classifications, however, were affected very little when questionnaire and death data were compared (fig 2).

The age at death of the athletes and nonathletes is compared in table 2. The difference in actual and expected age at death is not surprising, when we con-

sider how highly select the men in attendance at college were during these years. Also, since the percentages of returns of the questionnaires in the two groups were 55.66 and 51.59, it is quite probable the sample became even more select due to the difficulty in obtaining data on those who died in the earlier years. What is of interest here, however, is that there is little difference existing between the two groups. This is in agreement with the studies by Dublin [12] and Rook.[13] Differences between the athletes and nonathletes in the distribution of causes of death, type of death (sudden or lingering), and causes of death of parents were statistically insignificant.

TABLE 2.—*Comparison of Age at Death of Athletes and Nonathletes*

	Mean Life Expectancy, Yr.*	Mean Age at Death, Yr.†	Difference, Yr.
All deaths included			
Athletes	65.96	73.86	7.90
Nonathletes	65.97	74.24	8.27
Excluding accidental deaths			
Athletes	65.96	74.43	8.47
Nonathletes	65.99	74.59	8.60

*Computed for the time when the athlete or nonathlete was in college, using the appropriate mortality tables.
†Actual ages of death were used where death had occurred. Otherwise this represents the individual's present age plus remaining years of life predicted from current mortality tables.

Summary

The questionnaire method was employed in securing data on former college athletes (letter winners) and nonathlete controls. The results indicated that the longevity of athletes was approximately the same as that of controls and the distribution of causes of death was very similar. A significantly greater percentage of former athletes served in the armed forces and, of those serving, a significantly larger proportion served in the Navy and Marine Corps. A significantly greater percentage of former athletes smoked and drank, and their weight in college was appreciably greater. There were no significant differences in the number married, weight gain since college days, or strenuousness of activity while in the armed services.

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THE PHYSICIAN AS A SPORTSMAN

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• *The physician's interest in sports is twofold, for he may participate actively or he may be enlisted as an adviser on hygiene to athletic organizations or as a specialist in the treatment of athletic injuries. Several societies devoted to sports medicine exist, and important research is being done in this field. Physicians have also distinguished themselves as participants in many varieties of sport. It is necessary for the physician to adapt these activities to his changing capacities as he grows older. He may be inclined to exert himself immoderately after long periods of athletic inactivity and to view physical conditioning as a nuisance. His problem is to find time for frequent, regular, and moderate physical exercise and for relaxation and companionship. The many examples here given show that the problem can be solved.*

"It is very difficult for a physician in general practice to get a reasonable amount of exercise and play. He cannot take the time for golf, he dare not make a definite appointment with an opponent for tennis, and he must keep in communication with his office." Thus reasoned quite a few years ago a Dr. Weston, who was leading up to the fact that his favorite sport of archery could be readily practiced by a physician in spite of such inconveniences. In this present day of office hours by appointment, increased specialization, partnership and group practice, and a degree of prosperity that allows the physician to take time off when he feels like it, these difficulties may not seem to pose a serious problem.

Perhaps the thing that concerns the average physician today is not so much whether he can take time off for sports recreation but what sport he will find it best to pursue. The range of possibilities is wide and is limited chiefly by his preference and his pocketbook. Whether he believes in the therapeutic or the prophylactic values of exercise, he may be concerned as to whether he will overtax himself, particularly since his opportunities for recreational activity may increase as he advances in years. In this event, he might be more interested to hear from another sports fan, John DeVinne Singley of Pittsburgh, who has said, "It is essential that the heart muscle should not

be overtaxed while exercising. Choose a type of exercise suitable to your years if you would derive benefit from it. As a physician, and from personal experience on the bowling green, I recommend lawn bowling unreservedly."

Such evidence as is available indicates that, in the United States at the present time, there is no group of professional men that devotes more time to a greater variety of sporting and athletic activities than physicians. Although governing bodies of the various sports federations do not keep separate records of their membership according to occupation, the accumulated observations over a long period of time of interest in all sports, particularly with regard to record-breaking activities, coupled with a multitude of replies to a public appeal for information regarding the sports activities of physicians, have produced a sort of cross-sectional view of the extent of participation by our medical colleagues.

Professional Sports Medicine Groups

The great interest that many physicians have taken in the physiology of athletics is signalized by the organization and growth of such organizations as the International Federation for Sports Medicine (FIMS), the British Medical Sports Association, the American College of Sports Medicine, and the Western Council of Sports Medicine. The purpose of such organizations can best be summarized in the aims of the international federation: "To contribute toward the progress of medical sciences by the study of medico-athletic problems; to take all necessary steps for insuring that its conclusions are applied in all athletic and gymnastic activities."

The federation was established at St. Moritz, Switzerland, in 1928 and has since held congresses at Amsterdam, the Netherlands, in 1928; Turin, Italy, 1933; Chamonix, France, 1934; Berlin, Germany, 1936; Paris, France, 1937; Brussels, Belgium, 1939; Prague, Czechoslovakia, 1948; Montecatini, Italy, 1950; Paris, France, 1952; and Belgrade, Yugoslavia, 1954. It comprises a general assembly and an executive committee. Each national medical sports association appoints one delegate to the assembly. There are also guest members, one of whom is chosen for each country by the executive committee, and members of the executive committee, who are not national representatives. The executive committee, which is elected for a period of four years, meets every year. The congress of the general assembly is held every two years. It is supported partly by the host government and by members' subscriptions. There is a monthly official bulletin, *Studi di medicina e chirurgia dello sport*. National association members currently come from the following countries: Argentina, Austria, Belgium, Brazil, Czechoslovakia, Finland, France, Germany, Iran, Italy, Japan, Luxembourg, the Netherlands, Norway, Poland, Rumania, Spain, Sweden, Switzerland, the U. S. S. R., the United Kingdom, Venezuela, and Yugoslavia.

It may seem strange that our own sports-loving country is not represented in the federation by a national association, but there are some individual members from the United States. The closest thing we have to such an organization is the American College of Sports Medicine, which was founded April 23, 1954, for the following purposes: (1) to promote and advance scientific studies dealing with the effect of sports and other motor activities on the health of human beings at various stages of life; (2) to cooperate with other organizations concerned with various aspects of human fitness; (3) to sponsor meetings of physicians, educators, and other scientists whose work is relevant to sports medicine; (4) to make available postgraduate education in fields related to the objectives of the college; (5) to initiate, encourage, and correlate research; and (6) to publish a journal dealing with scientific aspects of activity and their relationship to human fitness.

Meetings of the college are held annually and alternately on the occasion of the annual meetings of the American Association for Health, Physical Education, and Recreation and of the American Medical Association. The third annual meeting was held in March, 1956, in Chicago. The membership is classified as fellows, associate fellows, members, affiliate members, and student members and is open to doctors of medicine, education, physical education, and public health, and to those holding master of science or arts degrees in fields related to physical education and biology. There are at present 78 fellows, 2 associates, 12 members, and one affiliate. A similar organization, the Western Council of Sports Medicine, was established in California in 1955. Although active membership is limited to physicians, laymen whose interest lies in this field are welcomed as associate members.

Participation in Sports

However, for every physician who carries his interest as far as joining such an organization, there are thousands who participate in sports either for exercise, recreation, relaxation, companionship, or simply because they enjoy competition. Some of the most enthusiastic sportsmen among the physicians are those well known to their colleagues because of their eminence in medicine and in other fields. Arthur Conan Doyle, who achieved fame as a writer, participated also in cricket, billiards, football, auto racing, sailing, rifle shooting, golf, and boxing. That remarkable American sage, Benjamin Franklin, who, although he did not hold a medical degree, was a member of several medical societies, including those of London and Paris, wrote many times on matters of public health and medicine and had a profound influence on medical thought in his day. He was an enthusiastic and accomplished swimmer.

There is probably no branch of sport that does not number among its participants physicians in the making, in medical school or postgraduate training, or in active practice. A surprising number have combined for a time the beginnings of a medical career with professional athletics. Naturally, those sports that depend on individual and unorganized participation draw the greatest numbers of physicians. The largest group of active participants are those who engage in hunting and fishing. The American Field Publishing Company states that there are more than 2,500 physician mem-

bers of 300 registered organizations holding 600 or more pointer field trials in the United States every year. Regular or occasional fishermen among the profession are estimated to number between 40,000 and 50,000.

The taste of physicians as far as participation in sports is concerned seems to follow the national taste among adult males in comparative age groups. There is no one activity that seems to be particularly associated with the profession. The many physician golfers and proportionately fewer tennis players seem to follow the national average for participation in these sports, if allowance is made for the relative economic status of the two groups. The ability to belong to the local country club makes these sports more available for the physician, which compensates for the smaller amount of time he may be able to spend on them. Very few physicians apparently undertake sports or maintain their interest in them as part of a conscious program for maintaining or achieving physical fitness. Rather, they are inclined, when free to do so, to exert themselves immoderately after long periods of athletic inactivity. They also tend to ignore the importance of diet and abstinence (alcohol and tobacco) as preparation for athletic activity and to view physical conditioning by gymnastics as outmoded, impractical, and just a nuisance.

Outstanding Performers

In spite of this, the roll of champions and outstanding performers in all sports activities includes many who have achieved this eminence during their medical careers. The following list, with the sports enumerated in alphabetical order, indicates the names and accomplishments of those who have come to my attention. I make no pretensions of being all-inclusive and tender my apologies in advance to all those who are unknown to me or who have been overlooked or inadvertently omitted.

Archery.—Since archery as a sport has evolved from hunting, it is one of the oldest sports known. It made its appearance in the United States as an organized sport in 1828, when the Club of United Bowmen was founded in Philadelphia with Drs. Robert Eglesfield, Robert E. Griffith, and Samuel Griffith Jr. taking part. Since that time many physicians have participated in and achieved eminence in this sport. Henry B. Richardson of Boston was winner of the Grand National Title of Great Britain in 1908, J. W. Doughty of Washington won the American National Archery Title in 1913, and Erwin Pletcher was the National Field Archery Champion in 1949. Robert P. Elmer won many archery championships between 1911 and 1922 and has produced several authoritative books on the history and practice of archery. Other outstanding competitors have been O. L. Hertig of Pittsburgh, Saxton T. Pope of San Francisco, H. G. Goldberg of Philadelphia, B. L. Rawlins of Chicago, I. V. Cole of Seattle, H. T. Elliot of New York, and C. S. Case.

Auto Racing.—Since road racing in sports cars is essentially for the young man, one does not find too many physician racers. Probably the outstanding competitor at the present time is Sherwood Johnston of Greenwich, Conn. Among other victories he numbers the President's Cup Race at Hagerstown, Md., and the eighth annual sports car *grand prix* at Watkins Glen, N. Y., where he drove his D-Jaguar last year at an average of 81.92 miles per hour.

Baseball.—Participation in baseball after college days is practically limited to semiprofessional or professional leagues today. D. L. Adams and James R. Purdy were members of the old Knickerbocker Baseball Club in New York, one of the last strongholds of the amateur game. Medicine's outstanding competitor in professional baseball is Tommy Brown, who played third base for the New York Yankees to pay his way through medical school and internship.

Basketball.—The sport of basketball is also primarily professional after college competition and, because of the peculiar traveling requirements and long season, virtually excludes medical men. Al Van de Weghe of the New York Knickerbockers, however, helped to finance his medical education for several years while playing in the toughest professional competition.

Billiards.—While some may question the inclusion of billiards as a sport, it has always been reported as such. Apparently no physician has ever excelled as a professional, but the amateur three-cushion championship was held for three consecutive years by two medical men, A. J. Harris in 1925 and 1926 and L. P. Macklin in 1927.

Boxing.—It is a matter of interest that the only amateur ever to hold the world's heavyweight boxing crown was a physician. "Gentleman Jack" Jackson of England gained the world championship in 1795 and retired undefeated. He later opened a boxing school and taught Lord Byron, among others.

Court Tennis.—The most ancient and most intricate of all the racket and ball games, court tennis, still enjoys a limited patronage today in the United States as well as abroad. Many physicians in the eastern part of the United States have played this game of kings. Probably the most proficient were two from Boston, Channing Frothingham and G. S. Derby.

Fencing.—The sport of fencing has always attracted the interest of physicians. In the United States the names of B. F. O'Connor, Graeme M. Hammond, who founded the American League of Amateur Fencers, and Norman C. Armitage and John R. Huffman, who represented the United States in Olympic competition, stand out. Huffman accomplished a remarkable achievement for a non-European when he took sixth place in the saber event at the 1932 Olympics. Tibor Nyilas of Elmhurst, N. Y., has been seven times national saber champion.

Field Trials.—As previously indicated, the breeding, training, and hunting of dogs is a principal preoccupation of many members of the medical profession. A few of those outstanding in recent years have been Samuel Orr Black of Spartansburg, S. C., John H. Powers of Cooperstown, N. Y., past Grand National Grouse Hunting Champion, Frank H. Lahey of Boston, holder of the National Quail Championship in 1928 and 1934, Harold E. Langsdorf, Mount Holly, N. J., five times holder of the American Pheasant Championship and holder of the National Pointer

Championship in 1954, and Francis Record Whitehouse of Lynchburg, Va., winner of the National Beagle Club's annual field trial in 1955.

Fishing.—Since fishing is not for the most part a competitive sport among the fishermen, but rather a contest between man and fish, it is hard to pick out fishing "champions." Among the thousands of medical fishermen who have enjoyed this recreation in its many varieties may be mentioned two who were national champions in flycasting, E. A. McFarland and E. A. Fogle, and two whose record catches do not seem at first so remarkable but have stood for a long time in the record book of fishing. C. A. Abbott at Bordentown, N. J., in 1865 caught the largest yellow perch ever taken in fresh water, 4 lb. 3½ oz. W. J. Cook in 1916 in the Nipigon River in Ontario took the largest brook trout ever caught, which weighed 4 lb. 8 oz.

Football.—In the days when amateur football teams represented the university rather than simply the college, there were quite a few players who continued to be active while in medical school. The three-year rule today and the revival of professional football have limited the possibilities for physicians' participation. Nevertheless, two outstanding all-American players played the professional game to support their medical studies, both, strangely enough, for the Chicago Bears. Daniel J. Fortmann, now a surgeon in Hollywood, Calif., starred for at least five years after being all-American at Colgate University in 1935. William J. McColl, an all-American selection while playing for Stanford University in 1950-1951, has played for the Bears more recently. Medicine has made a unique contribution to football in the number of men who have undertaken college coaching. Clarence W. Spears, all-American at Dartmouth College in 1914-1915, coached for many years in the Big Ten. George W. Hauser, all-American at the University of Minnesota in 1916-1917, coached for many years afterward and is now a dermatologist in Minneapolis. The longest current coaching tenure of any physician coach is that of Edward N. Anderson, all-American at the University of Notre Dame in 1921 and now head football coach at Holy Cross. Marvin A. (Mal) Stevens was all-American at Yale University in 1923 and subsequently coached at the university, at New York University, and for the U. S. Naval Training Base at Sampson, N. Y. He is now an orthopedic surgeon in New York.

In the field of Rugby football, a remarkable record is held by Leonard Stokes of Guy's Hospital, Oxford, England, who drop-kicked an 80-yd. field goal while playing for England in an international match in the 1880's. A current star of Gaelic football is James Brosnan, now of New Rochelle, N. Y., who is a member of the County Kerry team that won the All-Ireland Championship in 1955 and that played in New York in 1956.

Golf.—Golf has the distinction among other sports of providing a semiofficial part of the program of the American Medical Association's Annual Meeting and of many other medical meetings. The American Medical Golfing Association held its 40th annual tournament June 11 in Chicago. All male members of the A. M. A. are invited to join this organization. Although thousands of physicians play golf every year, we have never produced as distinguished a champion as the dentists' Cary Middlecoff, now a professional. W. Tweddell, an Englishman, won the British Amateur Golfing Championship at Hoylake in 1927 and was one of the game's distinguished amateur players. Frank Deighton reached the quarterfinals of the same tournament this year. There are many eminent medical golfers who compete in the American National Senior Championships each year, among whom is former champion Ralph Nichols of New Haven, Conn.

Horsemanship.—Although many physicians ride for enjoyment and exercise, very few are active in equestrian competition. Benjamin Rush recommended riding very highly to his patients. John Yarbrough of Los Angeles is the head of the group who call themselves "Los Charros," who ride each year with Los Rancheros Visitadores.

Hunting.—Fox hunting has claimed the allegiance of many physicians in the United States as well as in the British Isles. Probably no one in this country has a more remarkable record of devotion to this sport than Misch Caspar of Louisville, Ky. He has been a winner of many trophies between 1906 and 1953 and during this time has owned over 2,000 foxhounds. Ira H. Rapp of Charlottesville, N. C., and Joseph F. Shuffield of Little Rock, Ark., are other notable exponents of this sport. Big game hunting and fishing attract many medical men. Some roam the entire world in pursuit of their hobby. Among the notable participants from the United States are Theo S. Stashak of Santa Rosa, Calif., Herbert J. Movius of Hollywood, Calif., and P. L. Riddell of Williamsport, Pa.

Lawn Bowling.—Lawn bowling is a rather old sport that maintains a steady popularity among a relatively small group of devotees. John DeVinne Singley of Pittsburgh, who was quoted earlier, is singles champion of his club. Raymond W. Sendker of Buffalo was Lakeside Doubles Champion in 1955 and has held several national championships.

Mountain Climbing.—The sport of mountain climbing claims the interest of physicians not only as a hobby but because it is considered essential today for all big expeditions to the Himalayas to have at least one physician climber as a member of the party. The British expedition that scaled Mount Everest in 1953 included three physicians, Michael Ward, chief medical officer, L. G. C. Pugh, medical physiologist, and R. C. Evans, who went with the final assault team. Stafford Matthews of Edinburgh, Scotland, a gynecologist, participated in the assault on Kanchenjunga and L. Bruce Meyer was on the 1954 climb of Makalu. Charles S. Houston of Exeter, N. H., was a member of the party that attempted to climb Nanda Devi in 1936 and led the unsuccessful attempt to scale Godwin Austen, or K^2, in 1953. Other noted American climbers are Benjamin G. Ferris and William F. Loomis, Boston, Roger S. Whitney, Colorado Springs, Colo., and Henry A. Buchtel, Denver.

Pistol Shooting.—J. R. Calkins of the United States was a member of the winning revolver and pistol team shooting at 50 and 100 yd. at the 1908 Olympic Games

in London. Reginald Sayre of New York competed in many pistol-shooting events with notable success.

Polo.—Because of the restricted opportunities, elaborate equipment, and time required to play polo, few physicians have been known as polo players. A notable exception is Hugh B. Blackwell of New York, who represented the United States on one occasion in international competition.

Skin Diving.—Skin diving is one of the newest of all sports, but it already numbers many physicians among its followers. Two who have been interested in the medical problems involved are William T. Burns and Gordon Bateman of Long Beach, Calif.

Squash Rackets.—Squash rackets is the closed court game that has achieved the widest popularity in this country and throughout the British Empire. Notable physician players from the United States have been George M. Converse, Robert Dam, and William K. Miller of Philadelphia and Laurence M. Hutner, now of Los Angeles but city champion of Rochester, N. Y., from 1938 to 1942.

Squash Tennis.—Squash tennis has never been popular except in the northeastern United States. Alfred Stillman of Boston was the first national amateur champion and ruled in 1911, 1912, and 1914. H. R. Mixsell of New York was veterans' champion many times. In more recent years, Daniel C. Patterson of Bridgeport, Conn., and C. J. MacGrime of New York have been outstanding players.

Swimming.—Medicine has produced three Olympic swimming champions from the United States. G. E. Sheldon won the Olympic springboard diving championship in 1904. George Kojac, formerly of Rutgers University, in the 1928 Olympics won the gold medal in the 100-m. backstroke, was fourth in the 100-m. free style, and swam on the 800-m. relay team, which took first place. Major Sammy Lee, ophthalmologist in the U. S. Army Medical Corps, was Olympic diving champion from the high platform in 1948 and 1952 and climaxed his career in 1953 by becoming the only physician to win the James E. Sullivan Memorial trophy for being the outstanding amateur athlete of the year in the United States.

Table Tennis.—Table tennis has many physician players, but there are very few who enter competition. A successful competitor is Peter Fisher of Seattle, who formerly shared the Pennsylvania State Men's Doubles Championship and last year shared a similar title in Seattle.

Tennis.—The physician to be best known as a tennis star was probably James Dwight of Newport, N. Y., who five times, between 1882 and 1889, shared the national men's doubles championship. Undoubtedly the best tennis player-physician is David G. Freeman of Pasadena, Calif., who was once ranked no. 4 nationally in singles. Reginald Weir of New York has consistently ranked high in his district, as have Paul Newton of Oakland, Calif., and Peter Fisher of Seattle. J. A. Crane of Berkeley, Calif., was in 1955 ranked, with his son, Michael, no. 1 in father and son doubles by the United States Lawn Tennis Association.

Track and Field.—Some of the most outstanding athletic achievements of physicians of all time have been in track and field competition. Paul Martin of Switzerland won the silver medal in the 800-m. run at the 1924 Olympics while a medical student. Patrick O'Callahan of Roseville, Tipperary, Irish Free State, is the only physician to have won the gold medal twice in the Olympics, having been the champion in the hammer throw in 1928 and 1932. John E. Lovelock of New Zealand won the Olympic 1,500-m. run in 1936 and was also holder of the world's outdoor records for the mile as well as for 1,500 m. Arthur Wint of Jamaica, West Indies, won the gold medal in the 400-m. run in 1948 while a medical student. Roger Bannister, now of Guy's Hospital, Oxford, England, a keen student of the psychology and physiology of distance running, was the first man to run the mile in less than four minutes. Although he soon lost the world record to John Landy of Australia, he was able to beat Landy in near-record time in their famous race at the British Empire Games in Vancouver, British Columbia, Canada.

Although the United States has not produced any physicians who were world champions in track and field, we do have two noted competitors. Charles Robbins of Middletown, Conn., is the holder of 11 national titles in long-distance running events. He twice has been winner of the five-mile road race at Manchester, in which he competes annually. John Kingsley Lattimer, formerly of Columbia College and now professor of urology at Columbia University College of Physicians and Surgeons, held the Amateur Athletic Union 200-m. hurdles record for 12 years. He won the Millrose Games 50-yd. dash while a student at the latter college and later, while serving in the U. S. Army in Europe, he won the hurdles championship for the Seventh Army in the G. I. Olympics.

Yachting.—Sailing and powerboating rank high in the esteem of several thousand physicians in the United States. Britton Chance of Philadelphia became our only Olympic gold medal winner in this field when he sailed his 5.5-m. yacht to victory in 1952 at Helsinki, Finland. C. Darwin Jurss of Milwaukee won the Great Lakes sailing championship in 1936 and Benjamin Sawyer of Middletown, Ohio, won the Highlander National Class Championship in 1955. Some sort of transatlantic record was recently set by Hans Lindemann of Germany, who crossed this year alone from Liberia, Africa, to Haiti in 65 days in an overdecked canoe.

147 W. Main St.

Malignant Tumor Cells.—The structural pattern of a malignant tumor cell is sufficiently distinct from that of the normal cell to be readily identified in most instances even when viewed as an individual cell. The study of exfoliative cytology on which we depend for early recognition of cancer is based upon these observations. The changes most helpful for diagnosis of a tumor cell are nuclear, although cytoplasmic pattern, even in the light microscope, sometimes determines the type and source of the abnormal cell. The nuclear aberrations, the decreased cytoplasmic nuclear ratio, the coarser, more irregular chromatin pattern, the large, more numerous nucleoli, and heavier nuclear membrane are features in daily diagnostic use. No two tumors are alike and there is characteristically great cellular variegation in a single tumor, yet most tumors have certain morphologic features in common that are sufficient to enable us to say, "These look like cells of a malignant tumor."—E. E. Sproul, M.D., Particulate Components of the Cytoplasm, *Laboratory Investigation*, March-April, 1956.

RELATIONSHIP OF PHYSICAL FITNESS TO ATHLETIC PERFORMANCE AND SPORTS

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• *Physical fitness leads to better athletic performance, and persistent training will usually develop physical fitness. Detailed analyses of the anatomic and physiological characteristics of famous athletes show that it is possible to make fairly reliable predictions of athletic performance. Scores obtained by various static and dynamic tests exhibit various degrees of correlation with the scores made in competition, and it has been easy to pick out the tests that give the highest coefficients of correlation. Dynamic tests thus are shown to have higher predictive value than static tests. Type of physique, strength and power, respiratory efficiency, and cardiovascular components are among the factors that determine performance, but no two, or three, or four factors, even when combined in an optimum manner, measure all aspects of fitness. Fitness tests applied to former champions gave the best results in those athletes who were in continued training. Endurance training makes marked improvements in cardiovascular function. Ability of the endurance athlete to use oxygen is related to circulatory and respiratory capacity, but in sprints, weight lifting, and swimming there are many other important specifics.*

The relationship of physical fitness to sports is a two-way connection. Physical fitness surely leads to better athletic performances, and persistent repetition of daily training will usually develop physical fitness according to the character of the sport concentrated upon. The training for various sports differs, inasmuch as distance running is different from power performances, as in the high jump, shot-put, short sprint, or discus throw, and swimming 400 m. (as has been done by Boiteux, Hashizumi, and Konno) is different from pistol shooting, wrestling, or weight lifting. Success in such individual events depends upon the optimum combination of mental attitude, skill, and fitness. The great champion is apt to have these qualities and also the right body for the event. These characteristics should be illustrated to make them clear. Let us consider the types of fitness shown in two great athletes, Emil Zatopec and Roger Bannister.

Emil Zatopec has a lean, medium build (68.6 in. [174.2 cm.], 149.5 lb. [67.8 kg.]), with mesomorphic legs somewhat longer than usual and rather small (almost ectomorphic) chest and arms, and obviously carries an extremely small amount of dead weight. His legs are unusually strong. In his 5,000-m., 10,000-m., and marathon victories at Helsinki, Finland, in 1952, the peculiar nonuse of his arms, beautiful evenness of leg action and relaxed flatfoot style in his fairly short stride, and tantalizing head-turning and facial grimaces were interesting to watch, but in the last third of each race he left his competitors, with demonstrations of endurance that astounded everyone. The seven-year (1945-1952) laboratory record from Prague, Czechoslovakia, made available to me by Jiri Kral, shows his steady improvement in circulatory-respiratory capacity, which reached a climax at Helsinki. The scientific report states, "Zatopec improved and strengthened his natural somatic qualities with industrious training and with exercise until he reached his advantageous constitution of today . . . he went through and is constantly going through perfect many-sided physical training, which in the last analysis is the most important and deciding factor in the case of peak endurance sportsmen." It is remarkable that he did not even interrupt his training for military service. In the winter he ran in heavy boots in the forest or along some road. He trained both winter and summer. One minute after a 5,000-m. race in 1947, his blood pressure was 210/30 mm. Hg and his pulse rate 148 beats per minute. Before the race his blood pressure was 142/80 mm. Hg and pulse rate 68. In 1949, after his 10,000-m., world record run of 29 minutes, 21.2 seconds, his blood pressure one minute after the race was 160/40 mm. Hg and his pulse rate 150 beats per minute.

Kozik described Zatopec's "victory of the will" in 1949 and told of Zatopec's practicing breath-holding to train his will as he walked to work, counting poplar trees along the side of the road. He struggled with breath-holding day after day, "until he felt pressure in his head, weight on his chest, felt himself choking and felt like he was losing consciousness—then he fainted and dropped to the ground." Thus, Zatopec trained his will. Any runner who beat him had to beat such a will, not only a style of running or a body type. In 1951 and 1952 he trained by breathing oxygen mixtures and cultivated the relaxed upper-body style that enabled him to breathe the best. Such breathing of oxygen has been cited by A. V. Hill and Roger Bannister as being a possible means of conditioning the lung epithelium (through which oxygen and carbon dioxide must pass). In respiratory values, Zatopec had much higher than average values in volume of maximum ventilation, and, over four years of training, he increased the value for frequency of ventilation during exercise to three times that at rest. Seliger showed his pulse curve to be of the strong sympatheticotonic type. We have shown the same (fig. 1).

The results of tests made in 1951 by Hornof and Kremer in Prague showed an amazing ability of Zatopec's blood circulation to adapt to exertion. In the Harvard five-minute step test, the three pulse rate counts taken (after five minutes of stepping onto a 20-in. bench at the rate of 30 steps a minute) at from 1 to 1½, 2 to 2½, and 4 to 4½ minutes after the exercise period were 27, 29, and 31 beats, totaling 87 beats. In our records, only Bannister has recorded as good a test. In 1951, in the Flack test, Zatopec blew with a

force of 40 mm. Hg for 60 seconds. After 30 step-ups in a minute, using a chair, he blew for 55 seconds. These figures are at the very top of our scales. In the report of Hornof and Kremer, the data on oxygen intake during the effort are missing, so we have only a partial fitness report.

Roger Bannister demonstrated some remarkable measurements of fitness when we tested him in London, England, in May and June, 1952, at the Royal

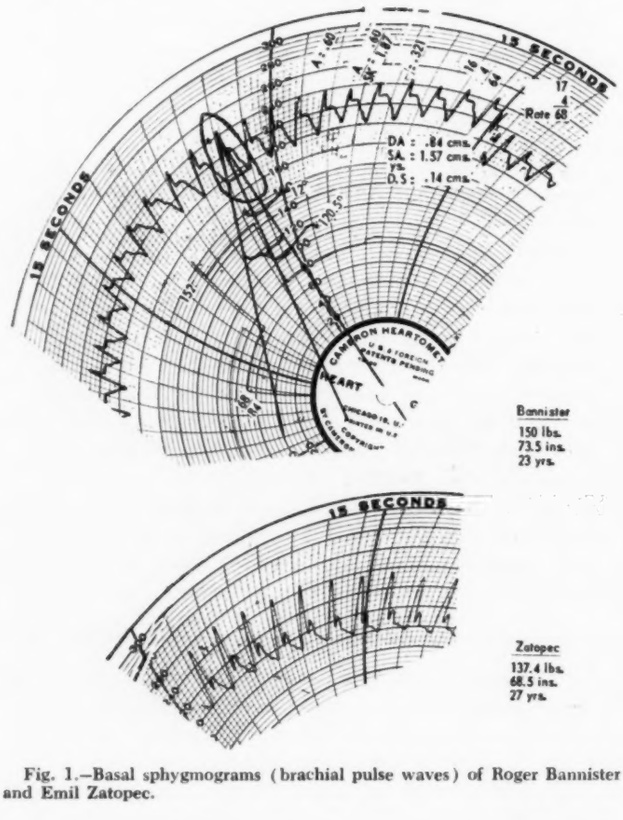

Fig. 1.—Basal sphygmograms (brachial pulse waves) of Roger Bannister and Emil Zatopec.

Free Medical College. In the regular Harvard five-minute step test, his pulse rate was 108 beats per minute within the first 15-second interval after the effort, and there were 29 beats in the 1 to 1½-minute recovery interval, 29 beats in the 2 to 2½-minute interval, and 29 beats in the 3 to 3½-minute interval, totaling 87 beats. This equaled Zatopec's score. So far as we know, these are the two best records on this test. On another day Bannister performed remarkably in our "all-out step test," doing 40 steps per minute on a sturdy chair, 17 in. in height. At 5¼ minutes he was almost "all-out," as his legs began to tire obviously. We were using a large single Douglas bag to collect his exhaust gas. When this was full, we stopped him. Throughout the test he had the two-way valve in his mouth and his nose was clipped. In the first 15 seconds after this test, his heart rate was 120 beats per minute, which we consider remarkable. His systolic blood pressure after one minute was 170 mm. Hg, and his diastolic pressure was 60 (phase 4). The significant points are his extremely low pulse rate of 120 beats per minute and the drop of his diastolic pressure from 78 while lying (systolic was 114) to 60 mm. Hg (phase 4) while sitting (his pressure while standing was 124/86 mm. Hg).

Bannister's heart in diastole is large and strong, like that of a racing greyhound (fig. 2). The transverse diameter was found to be 15.4 cm. and the frontal area 168.4 sq. cm. The internal chamber volume was calculated by the Keys and Friedell equation to be 1,068 cc., which, divided by body weight in kilograms, gave 15.65, the largest ratio found in our examination of several hundred normal subjects. The ratio of right to left diameters is 1:2.27, or just normal. Similarly to the Nylin ratio of volume to stroke volume (11.82), we used an inverted ratio: output in square centimeters (by brachial sphygmogram) to heart size in square centimeters (taken as the area of the heart in the diastolic phase on frontal x-ray). This index has a correlation of 0.68 with the gross oxygen intake (liters per kilogram of body weight) and with the time of the "all-out" treadmill run. Bannister had a result of 1.911, in spite of his large heart size.

Under conditions of hard work, Bannister's average oxygen intake was 3.226 liters per minute in our "one-bag oxygen-intake test," which is a high value for the 40-per-minute 17-in. chair-step test, with a respiratory quotient of 0.93. The distress that he built up

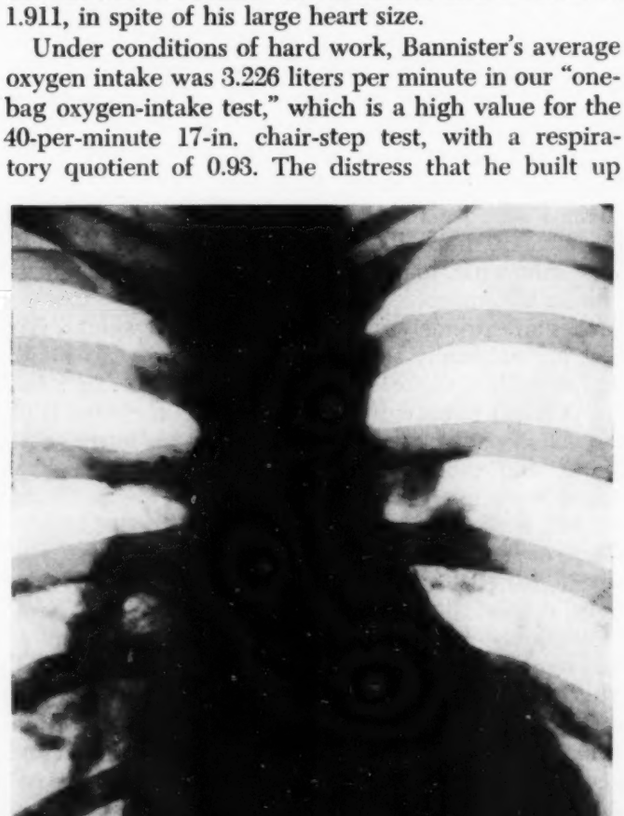

Fig. 2.—X-ray of Roger Bannister's heart in diastolic phase taken in May, 1952.

during this effort was an oxygen debt of 0.0097 liters per minute per kilogram of body weight, or 3.473 liters of oxygen deficiency, which is very low. His pulse rate in the 15-second interval immediately after the test was, as stated, 120 beats per minute. In this all-out step test, his breathing was full and regular throughout. There were no signs of extreme distress, no extreme tensing, no facial grimaces, and no rapid

shallow breathing. The figures show that Bannister's oxygen deficit (debt) was very low. This was positive evidence of excellent adjustment to a very hard rate of work. The low pulse rate of 120 beats is a record among our observations, and his postexercise blood pressure of 170/60 mm. Hg was relatively low. It is significant that his diastolic blood pressure dropped

Bannister's best performance up to May, 1952, in the 1,500-m. run was 3 minutes, 48.4 seconds, and in the mile, 4 minutes, 7.8 seconds. In the July, 1952, Olympic Games at Helsinki, he ran the 1,500-m. run in 3 minutes, 47 seconds. He was remarkably good at stepping up and down on a chair at 30 or at 40 steps per minute. His gross oxygen intake per minute per kilo-

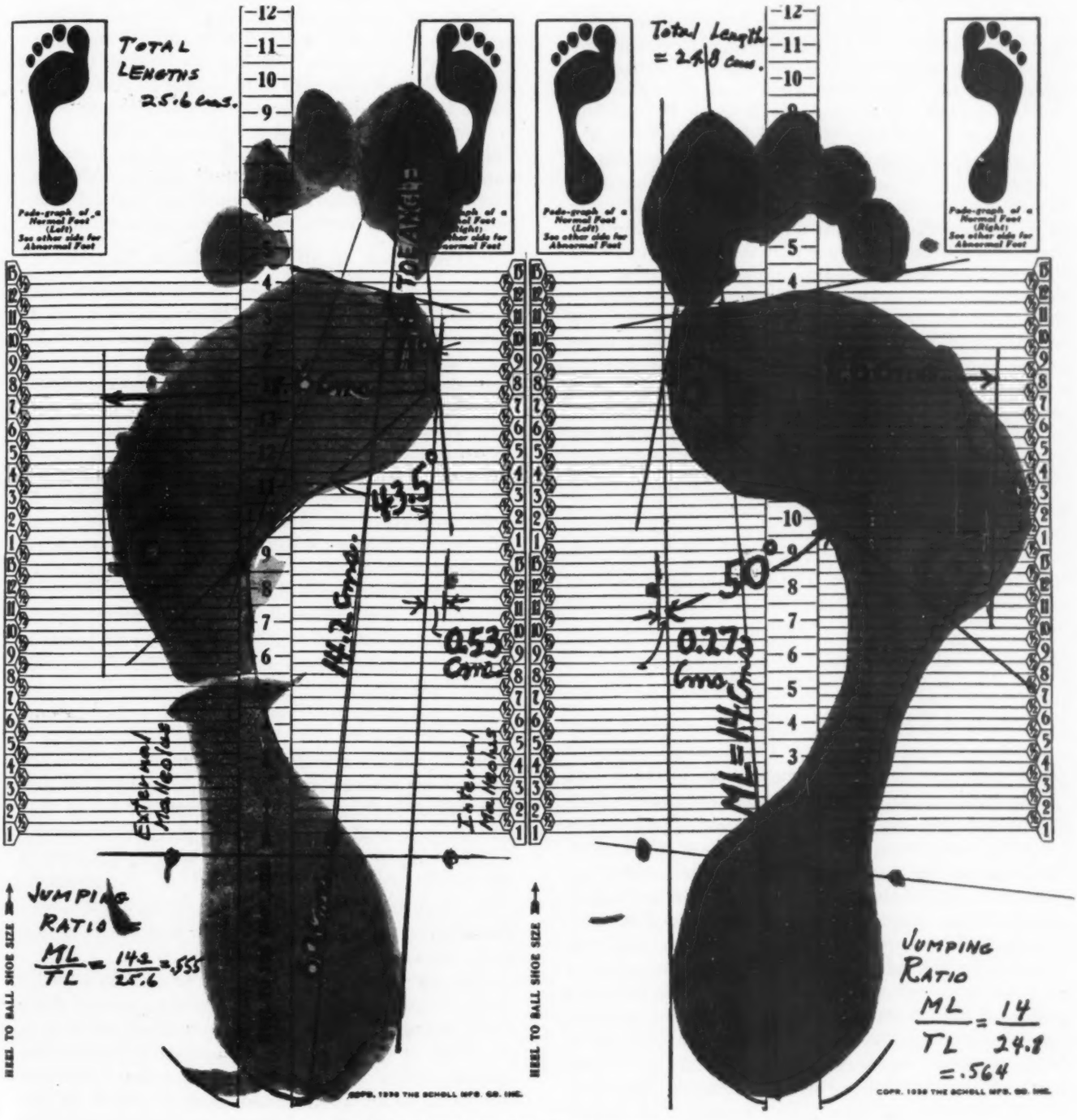
TOTAL LENGTHS 25.6 cms.
Pedo-graph of a Normal Foot (Left) See other side for Abnormal Foot
TOE ANGLE
43.5°
14.2 Cms.
0.53 Cms.
External Malleolus
Internal Malleolus
JUMPING RATIO
ML/TL = 14.2/25.6 = .555
HEEL TO BALL SHOE SIZE
Total Length = 24.8 Cms.
Pedo-graph of a Normal Foot (Right) See other side for Abnormal Foot
50°
0.27½ Cms.
ML = 14 Cms.
JUMPING RATIO
ML/TL = 14/24.8 = .564
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Fig. 3.—Roger Bannister's footprints, showing comparative measurements.

during the work from 78 lying to 60 sitting and his standing from 86 to 60. We believe this drop in phase 4 of the diastolic pressure is related to cardiovascular adjustment to continuous and rapid work. Lack of adjustment is shown by a rise in diastolic pressure.

gram of body weight of 0.0517 liters is the highest we have obtained of some 100 runners and athletes who have taken our 40 steps per minute all-out step test; in this he lasted 5¼ minutes. The highest precordial T wave in an electrocardiogram taken at rest was 25.3 mm. high, which was in keeping with his heart size of

25.1% larger than normal according to the Ungerleider-Clark and Gubner tables. After his all-out step test his quickness of recovery was amazing, since he had a postexercise pulse rate of 108. Beyond any doubt, these wonderful circulatory measurements explain his ability to hold the pace of 57.5, 60.7, 62.3, and 58.9 seconds per lap in his mile run at Oxford on May 6, 1953, or of 59.2, 59.8, 59.6, 60.2 seconds at Vancouver, Canada, on Aug. 7, 1953.

In a lecture in London, on May 5, 1952, I predicted that Roger Bannister had the potential to run a mile under four minutes, but his legs needed further seasoning and his schedule of three workouts per week was inadequate. I recommended some leg-training exercises and in a long talk told him that I thought he could do it. The London *Daily Mirror* published my prediction. A year later, the day after Bannister did it, the prediction was republished by the same paper. In New York, on the day after the run, he said that his new record was partially due to taking up an improved and intensified training program. When we tested him we were amazed that he could do only 15 straddle-chins, 14 floor push-ups, 38 squat jumps, 75 side leg-raisings (right and left), and 35 sitting tucks and at his poor flexibility. He was a good jumper and excelled on the agility run. In the 18-item all-round motor test, he was poor, scoring only 7 out of 18, missing all three of the balance tests, two of the flexibility tests, the breath-holding test, and all of the muscular endurance tests. It was plain to me that Bannister was a great running type, rangy and lean, with powerful lungs and a crural ratio of 1.423, as high as our tables record. His long legs and trunk length class him as the running type. His running coordinations and breathing were beautifully developed. His feet are of the springy, running-jumping type (fig. 3) with good arches, almost no pronation and a long forefoot (ratio of left foot, malleolus length/total length = 0.555; right foot, 0.564).

Bannister has certain important psychological characteristics worth mentioning. On Cattell's 16-factor personality test, he was extremely high in the E and Q-2 factors, indicating extreme dominance rather than submission and extreme independence of spirit. His very high amplitude precordial T wave (25.3 mm.) and high systolic amplitude of the brachial pulse wave (1.57 cm.) suggest that he is also high in factor F (animation versus despondency). In Cattell's test his percentile rank was 80. His basal metabolic rate was +21.4%, or 44.9 calories per hour per square meter of skin. His own interpretation to us was that it was a matter of will to run the mile in under four minutes, but one day, when he felt like giving his all, he would do it. In more technical aspects, Bannister demonstrates the great importance of training by breathing oxygen mixtures and practicing regulation of breathing.

Role of Athletic Training

The role of athletic training for physical fitness is further typified by the case of the great Japanese swimmer, Furahashi. In 1949, he set magnificent world records in the 400-m. swim (4 minutes, 32.6 seconds) and 1,500-m. swim (18 minutes, 19 seconds) at Los Angeles. He was in magnificent physical condition. He was then a college student and free in the summer to train hard for from three to six hours per day. Between that time and 1952, he had been graduated and had settled down to an eight-hour working day. When he did so poorly at Helsinki, being shut out of the 1,500-m. swim and finishing last (4 minutes, 42.1 seconds) in the finals, we asked him the reason for his decline. His simple answer was, "No time to train hard anymore." It is believed that athletic endurance is developed mainly by training day by day. Whereas Zatopec did not race hard until he was 19 years of age, Roger Bannister before he was 12 years of age began cross-country running and competition in track. From 1941 to 1952 he trained regularly in sports, including some rowing and Rugby football during 1944-1946. From 1946 on he specialized in track but did cross-country running during the winter to build endurance.

Predictions of All-Round Athletic Success

Several methods have been used to predict relative success in college athletics. DiGiovanna studied 18 measures in relationship to eight sports and concluded that the athletes in general were differentiated from normal young men by having more explosive power, by being larger and heavier, and by having greater arm and leg strength. Each sport was shown to have its own unique pattern of factors for success, but, in general, athletes are typically stronger and heavier and are more powerful (by strength multiplied by vertical jump) than nonathletes of the same height. While DiGiovanna's study in 1943 showed statistical significance for most of the various measurements, no composite formula was developed beyond the use of MacCurdy's power formula of strength multiplied by velocity, simulating the physics equation of power = force × velocity, developed in 1933. This was based upon the combination of two lines of research previously published by Rogers in 1925 and Bovard and Cozens in 1928. In 1887 Dudley A. Sargent had published significant articles on "The Physical Characteristics of the Athlete" and, in 1921, "The Physical Test of a Man." Sargent's work was empirical rather than based upon modern statistics of prediction, but his insight was remarkable. He was a leading advocate of the pulley-weight exercises and of dynamometer strength tests. Several workers have shown the basic importance of strength to athletic performance. Several others have emphasized speed.

The next important advance came in 1940 with the work of Leonard A. Larson, who made a careful statistical analysis of the data of 15 motor tests selected on the basis of their presumed relationship to all-round athletic ability. Larson demonstrated that "dynamic" events, in which a man lifted, pushed, pulled, or propelled his total body weight against gravity, had much more relative validity than the older static tests of dynamometric strength, which in themselves were more valid than any combination of body measurements or proportions. Larson produced a simplified weighted formula: predicted athletic capacity = 2.12 (no. of chins) + 2.27 (vertical jump) + 1 (no. of dips

on parallel bars) (in standard scores). Larson further adjusted his prediction tests in 1941 to add the dodge run (outdoors). He also continued to study various combinations and recommended simplified tests to the U. S. Army Air Force composed of (1) baseball throw for distance, pull-ups, and vertical jump and (2) 300-yd. shuttle run, pull-ups, and sit-ups. In using these tests with 1,031 college freshmen, Landis showed that a course in basic conditioning produced the greatest improvements in a semester of training, with tumbling-gymnastics next, compared to swimming, tennis, boxing, weight-training, volleyball, and wrestling.

In an analysis of the Larson-type tests, we found certain omissions that made us dissatisfied with the tests. One of these was the omission of any item that took longer than two minutes to perform. A comprehensive monograph entitled "Endurance of Young Men," published in 1945, sustained our position that the mile run had greatest all-round predictive value in a 28-item athletic criterion. Next came chinning the bar, floor push-ups, hops, dips on parallel bars, forearm push-ups, sitting tucks, and side leg-raisings. Some items rated surprisingly low, including the elbow-to-knee sit-ups, the step test, the stick body, leg lifts, sit-ups (feet free), chest-raisings and V-sit test. Our factor analysis and test construction work yielded several test batteries, which have been published. The University of Illinois has since used the three-item all-round muscular endurance test (0.366 chinning the bar + 0.401 sitting tuck + 0.411 mile run). Our laboratory has used the four-item indoor test (0.323 chinning + 0.279 floor push-up + 0.282 sitting tuck + 0.365 hop). In these equations standard-score results are multiplied by the weightings, the results added, and the totals rated by our published tables. Track sprinting aptitude is shown by the total-body-reaction-time test published in 1951 by Garrett and me. It is fairly highly correlated with the vertical jump and the Illinois agility run test. High-jumping ability is fairly predictable from the vertical jump test, with height and length of legs related to length of trunk.

I made a comprehensive study of the relationship of various physical fitness tests to the total of a 22-item criterion in 1947. The highest (most valid) type test was the 18-item stunt type test or the 14-item motor test; next was strength (sum of two grips, back-lift, and leg-lift on dynamometers); next was somatotype rating; and next the Harvard five-minute step test. The 18-item motor test has been widely publicized. In addition to those mentioned, a few other desirable but less valid tests are the Schneider index, vital capacity, adipose tissue, and a body-type picture with posture measurements. The 14-item test revealed an appalling amount of unfitness among the young men coming to college from the high schools. The 18-item test has shown even greater proportions of unfitness among the adult population, both men and women. An interesting observation is the fact that a great runner like Roger Bannister could be so poor in sections of this test involving balance, flexibility, strength, breath-holding, and even aspects of muscular endurance. No single sport develops all the types of fitness sampled even by this test. The case for all-round fitness has been presented by a competent committee at Springfield College, Springfield, Mass., and also by a competent committee composed of the entire staff at the University of Illinois.

Superior short-duration athletic performance involves power as stated. Several studies have separated power into strength and velocity (speed) components. The first notable study of this type was by Charles H. McCloy of Iowa University, in 1932. Other studies have followed by Rarick, in 1937; Hutto, in 1938; Coleman, in 1940; and Carpenter, in 1941. McCloy in 1940 in *Psychometrika* summed up this particular line of research, particularly with respect to the use of the factor analysis method.

Body Build and Athletic Performance

A broad view of physical fitness includes the structural aptitude (body build) for the particular event. Being "fit for the event" involves, first of all, a physique appropriate to the event. Thus, the high jumper is usually tall and slender, relatively long in the forelegs to thighs area, and with a long metatarsal arch compared to the length of the whole foot; he is built somewhat like a grasshopper, with long forelegs and feet along with strong thighs and light body (as are DeSilva, 1952 hop, step, and jump Olympic champion, and Jesse Owens, 1936 Olympic sprint and broad-jump champion). The typical diver is medial and muscular in build (as are Clotworthy, Browning, and Harlan). The middle-distance runner is generally long-legged, with a relatively lighter upper body (as are Sowell, Wint, Bannister, Landy, and Tabori). The typical soccer or football athlete is muscular and may be tall, medium, or short. The weight lifter is usually seen as a heavy (muscular and fat) type with unusually short levers (as are Anderson, Davis, and Kono).

Endomorphic persons are notably absent in any distribution of athletes. These are types with long and bulky viscera, large amounts of fat and fewer muscle fibers than are needed for athletic success. Some mesomorphic wrestlers grow fat, but they are not truely endomorphic. Kohlrausch, Arnold, Telkka, Bartolome, Sills, and I have made various studies of athletes, utilizing anthropometric techniques. Sills and I have made adaptations of Sheldon's somatotyping method, which has also worked out well in the classification of aviators. There is extensive literature on the relationship of body build to athletic performance, which is summarized by the authors mentioned. An appropriate body type helps to win, but there are important exceptions to the rule, due to many years of developing skill, experienced judgment, and the will to win. There are some short tennis players, swimmers, and ball players as exceptions, just as there are some heavy golfers, pistol shooters, and sprinters, or short pole vaulters and basketball players, but we consider these to be the exception rather than the rule.

In making a prolonged study of Bob Richards, we found that he could run as fast with the pole as anyone and could spring exceptionally well onto the pole at the moment of take off, but his timing and speed of draw up were poor. Dick Ganslen coached him carefully on this point, and I advised a weight-training program for his hands, shoulders, and thigh

flexors, which led to a better handstand on the pole and an improved push-away of the pole. His fitness improved so that he could handle his body weight while on the pole as a gymnast, bringing about a gain of about 14 in. We saw him demonstrate this to win the Olympic title at Helsinki. Richards had remarkable fitness, and this carried him twice to the American decathlon title. He is probably the smallest man (167 lb. [75.7 kg.], 5 ft. 9 in. [175.26 cm.]) ever to win this title. Before Richards, all of the top pole vaulters were 6 ft. (182.88 cm.) or over, and Ganslen concluded, after studying the 15 top pole vaulters of the world, that pole vaulters should be tall (as are Warmerdam, Ganslen, and Laz). Bob Richards proved the exception, after vaulting over 15 ft. more than 60 times.

When athletes are placed in Sheldon's body-type triangle, they are grouped so that athletes whose performances feature agility are taller and thinner but are strong for their body weight (ectomesomorphs). I have made several such charts of top American athletes, which were published in "Physical Fitness of Champion Athletes" in 1951. In 1941, after studying various data, I classified athletes featuring agility: tennis players, pole vaulters, javelin throwers, high jumpers, basketball players, and distance runners were classed as ectomesomorphs and divers, gymnasts, and most ball players (football, baseball, soccer, and lacrosse players) as medial mesomorphs. Weight men (shot putters, hammer throwers, and weight lifters) are mesomorphs or endomesomorphs. It was also shown that mesomorphs and ectomesomorphs were relatively better in various physical fitness tests, such as for strength, cardiovascular condition, breath-holding ability, speed, and agility, and that they had less fat. It is shown that athletes usually possess superior fitness in these qualities. Willgoose, Rogers, and Sills have recently confirmed these trends. Sills and Everett and Sills and Mitchen have made other confirming studies showing the somatotype to be a factor.

Tappen, in 1947, made an extensive study of 46 top weight lifters in National Amateur Athletic Union Competition, which was published in 1950. Body weight correlated +0.85 with the press, +0.82 with the snatch, and +0.80 with the clean and jerk. In these subjects, height correlated with weight +0.87. After partial correlation to remove the influence of weight, height correlated with the press –0.34 and with the snatch +0.14. These regressions were linear. After dividing out height to reduce the body measurements to indexes, it was shown that strength is much more important but that short levers (arms and legs) and a large trunk do provide an advantage. The correlations of these indexes with performance were low.

An extensive Finnish study on 245 athletes by Telkka, Pere, and Kunnas, in 1951, showed the men to be above average in height and weight. In height, first came the throwers with 6 ft. (180.7 cm.); then, jumpers, with 5 ft. 10¼ in. (178.3 cm.); sprinters, with 5 ft. 9¾ in. (177.1 cm.); and long distance runners, with 5 ft. 7 in. (172 cm.). The limb lengths were in the same order. In weight, the throwers were heaviest, 189 lb. (85.7 kg.); then came the jumpers, 159 lb. (72 kg.); the sprinters, 154.5 lb. (69.6 kg.); and the long-distance runners, 142 lb. (64.5 kg.). A few exceptions were found among all but the weight men. Some of the Finnish runners have been rather stocky (as Lehtinen and Maki); so were Gil Dodds and Glenn Cunningham, of the United States. Finland's greatest all-round athlete, Eric Wilen, 35 times national champion, is a rather heavy, medial mesomorph. Nurmi conforms closely to the ectomesomorph pattern. In general, the athletes whose performance deals with weight have broader pectoral and pelvic girdle dimension and are both heavier and taller, with deeper chests than normal. No regular pattern existed among sprinters, but the wrestlers were broader and more compact than normal. These differences tend to be reduced by the system of weight classes in boxing and wrestling.

Sills and Everett have shown that mesomorphic subjects are generally superior, while the endomorphic subjects are handicapped by having too much dead weight (fat) to perform well in many athletic events, and that ectomorphs lack the needed strength for many events but may succeed in jumping, hurdling, vaulting, and running. Many top runners or jumpers have been very slim; this is particularly true in basketball. By studying freshmen at the University of Iowa in a factor analysis of the components of ectomorphy, mesomorphy, and endomorphy, Sills found only the factors of endomorphy and mesomorphy rather than three basic factors, as postulated by Sheldon. The multiple correlations of the Sheldon component ratings, as correlated with various performance events in the Iowa study, are sit-ups, R=0.567; pull-ups, R=0.567; 300-yd. run, R=0.494; and 100-yd. pick-a-back run, R=0.462. These coefficients show that body type is a factor in physical performance.

Seltzer has shown that there is a possible relationship between the morphology of individuals and their consumption of oxygen. The more "linear" individuals with not too long legs and arms, relatively long torsos, flatter and wider chests, and narrower hips compared to width of shoulders have higher oxygen intakes in the resting state, irrespective of surface area or body weight. In moderately paced, long-continued exercise, the linear type as described can take in oxygen at a faster rate than the stockier (lateral) mesomorphic or endomesomorphic athlete, but the latter may occasionally succeed by cultivating relatively greater mechanical efficiency (skill). In exhaustive work on the treadmill, greater oxygen intake and total utilization of oxygen are shown by the linear rather than the lateral individuals with moderate limb lengths.

To conclude, I agree with Culumbine that anthropometric dimensions and proportions exert a trend, but in most activities other factors of will and training are dominant, compared to the inherited somatotype, provided the extremely heavy and obese subjects (endomorphs) are eliminated.

Circulatory-Respiratory Factors of Fitness

A. V. Hill summarized the scientific basis of athletic records as being centered in the oxygen requirement, or the ability to utilize oxygen at a fast enough rate

to meet energy demands. Such a demand usually exceeds the amount taken in by breathing and internal respiration during the exercise. An additional supply comes from the body hemoglobin and is usually designated as oxygen debt, or a type of oxygen deficiency that is repaid after the exertion is over. It has long been thought that tolerance of oxygen debt is an important characteristic of fitness, but this has been impossible to prove so far. Franklin Henry has claimed that Hill's theory of oxygen requirement is theoretically true, in which the net intake oxygen is added to the net debt oxygen and the sum of these divided by the time of the effort, but we have shown that oxygen debt is almost worthless for predicting the time of the treadmill run. High oxygen intake for the time of the race is most important and, along with determination to withstand carbon dioxide tension, is a main factor in sustained endurance. Zatopec's amazing feat of running the 400-m. run, in the "walk-run-walk-run" series, from 30 to 50 times in a daily workout developed his oxygen-intake capacity to relatively high levels, and his repetitious breath-holding program while walking trained his autonomic nervous system and respiratory center to tolerate feelings of carbon dioxide tension.

Research on oxygen intake during work has usually shown that athletes of the championship endurance level have capacity for taking grossly over 4 liters of oxygen per minute (including the basal metabolic equivalent). In the famous experiment reported by Robinson, Edwards, and Dill in 1937 as "New Records in Human Power," Don Lash developed a gross maximal oxygen intake of 5.37 liters per minute. The runners, Glenn Cunningham, Gene Fenske, and Venske, all had gross maximal intakes of over 4 liters per minute. This was also found to be true in a similar study of Gunder Hagg and Arne Anderssen, carried out at Stockholm by Gustav Nylin in 1945, and Henderson and Haggard reported 4.1 liters per minute for the best man in the 1924 Olympic crew, as tested in a simulated rowing experiment at Yale in 1925. Astrand has shown Landy to have an oxygen intake of 5.04 liters per minute.

The pH concentration of the blood, the terminal pulse rate, and the lactic acid concentration give indication as to how long one can hold out against the internal stress. Montoye demonstrated a correlation of +0.66 between terminal pulse rates and lactic acid concentration, using the Harvard fatigue laboratory data. The ordinary person can tolerate a blood pH value of approximately 7.2 and lactic acid concentration of 70 mg. per 100 cc. and may develop a terminal pulse rate of 200 beats. The champion may tolerate a pH concentration as low as 6.82 to 6.85 (John Marshall and Gil Dodds) and a lactic acid concentration of 200 mg. per 100 cc. and during exercise will seldom develop a pulse rate over 160. Roger Bannister's phenominal pulse rates after the Brouha five-minute step test, of 29, 29, and 29 beats at 1 to 1½, 2 to 2½, and 3 to 3½ minutes after the stepping, are revealing of his physical fitness as tested by me in May, 1952. He set several cardiovascular records in an all-out step test at 40 steps per minute, at the end of which, 10 to 25 seconds after the 5¼-minute duration time his pulse rate was 108 beats per minute, with a blood pressure of 140/60 mm. Hg.

Relatively, by our one-bag gross-oxygen-intake test, he developed an intake of 3.96 liters per minute, which is estimated from our data to be equivalent to 5.16 liters per minute as a maximal intake about three-fourths of the way through the test. In DeSchriver's comparative work in our laboratory, the maximal is 1.2 liters per minute above the one-bag test value as an average. The one-bag intake is an effective method to rate the relative circulatory capacity of athletes on a comparative basis, as my predictions have shown for treadmill running endurance. The serial-bag method is seldom used because of the great amount of time involved in making so many determinations of oxygen and carbon dioxide. In relatively slow, long work on a bicycle or on the flat, a higher value of gross oxygen intake can be secured, compared to the relatively faster adjustment from scratch to a maximum time of five minutes. The one-bag method simulates the hard, fast effort of a 400-m. to a mile run, with one to five minutes of running at 10 miles per hour on an 8.6% grade on the treadmill. It has been a very satisfactory method of testing the relative circulatory-respiratory fitness of athletes. This should not be confused with determining the "maximum," as Astrand and Taylor, Buskirk, and Henschel have done. Only rectilinear proportionate ratings are needed to determine the correlation coefficients and predictions. Our equations to predict the all-out treadmill run time appear to be the first of this type for a standardized all-out treadmill run test: time (standard score) = 0.68 gross oxygen intake (liters per kilogram of body weight in standard score)—0.46 rate of oxygen debt (liters per minute per kilogram of body weight in standard scores). (In this equation the athletes who ran the longest on the treadmill had a lower rate of oxygen debt—they developed an oxygen deficiency more slowly. Related to various intervals of the run time, the curve of the developing deficit is not linear but curves upward sharply near the end of the run as oxygen intake curves downward. Each man does the best he can on this test, making whatever adjustments his states of fitness are able to accommodate at the time in the particular type of run. This type of all-out test is the best to determine athletic fitness reasonably quickly.) In my book, "Physical Fitness of Champion Athletes," published in 1951, numerous oxygen intake and debt data are given on some 100 top American athletes in track and field, swimming and diving, and gymnastics and on a few others in wrestling and skating. The 1955 study by DeSchriver supplements the 1951 report. This shows the difference between average and maximum oxygen intake.

An extended analysis of John Marshall, just previous to his breaking five world's records in swimming from 200 to 600 yd., gave indications that he was very fit. When the time came to put his fitness tests on record, we found that he had the largest gross oxygen intake of any swimmers in our data on the Cureton-VanHuss simulated swimming test for speed swimming. His pH level in a test sample of venous blood

taken one minute after this was 6.82; the 100-yd. drop-off (without a dive and all-out all the way) swimming endurance index was 1.5 seconds, and his ratio of heart output to heart size was at the top of the scale. We predicted his 100-yd. drop-off swim to be 55.6 seconds, and he swam 54.9 seconds with a 1.9-second drop-off. This test combines short-sprint speed for 60 ft. with endurance by the formula published by me in 1935: time for 100 yd. in seconds = 5.98 (time of 60 ft. sprint in seconds) + 2.88 (drop-off index) –2.63.

Other equations for the diagnostic analysis of swimming were published by Wilson and me, for predicting the short 60-ft. sprint (crawl and back and breast strokes). I also published the prediction equations combining the most valid factors for predicting success in 100-yd. and 440-yd. swims. This type of work significantly differentiates power and skill from endurance. Swimming for speed is shown to be mainly power and skill for 60 to 75 ft., but as the distance lengthens the circulatory-respiratory fitness looms as the dominating factor. Ford Konno and Yoshinobu Oyakawa, the great Hawaiian Olympic champions, have very flexible ankles, strong arms, and wonderful kicks, but their ability to hold such a fast pace over the longer distances is mainly due to relatively great circulatory-respiratory fitness and to their training diligently to hold the fast pace over a longer and longer distance. From our comparative studies of the Japanese and American swimming teams of 1932 and 1936, we demonstrated that the percentage of superiority of these Olympic men was mainly in circulatory-respiratory fitness, compared to groups of Yale University, Dartmouth College, and Springfield College groups. These data were published in 1932 and 1947.

The gross-oxygen-intake test is the most valid test of the ability of the heart, lungs, and muscles to circulate the blood. It has been applied most successfully to treadmill upgrade running, ordinary flat running, rowing, running in place, and swimming, but it has not as yet been related to other types of performances. It would be valuable to know the gross oxygen intake results on a variety of hard exercises. From available data in hand now, it seems clear that the test is most valuable as a predictor of performance in events of endurance that use a great deal of musculature and are continued to the point of virtual exhaustion.

Specificity of Physical Fitness Tests

The fact that fitness has many specifics, like a mosaic, has been hard to comprehend. It is clear that no single item measures all aspects of fitness. The truth is that no two, three, or four items, even when combined in an optimum manner, measure all aspects of fitness. The proof of this is reflected in the following research: 1. The Larson chinning–vertical jump–bar dipping test was correlated with my 30-item motor fitness criterion. The result was a correlation of +0.447 in 171 cases of young men in the service classes at the University of Illinois. The Larson weighted index correlated +0.338 with endurance, +0.383 with power, +0.492 with agility, +0.218 with dynamometer strength, +0.031 with flexibility, and +0.019 with balance. No prediction of body-type or circulatory-respiratory fitness from this Larson test was possible. 2. Any table of intercorrelations for measures of balance, flexibility, agility, strength, power, and endurance was shown to have a predominance of low correlations between the items. From the 30-item motor fitness criterion Welser, Huffman, and I made a simplified 7-item motor fitness test that included items of greatest all-round predictive value (R=0.78). The items included were dive and roll, medicine ball put, bar vault, chinning, leg-lifts and sit-ups, breath-holding, and man lift. 3. A factor analysis of 22 items of fitness gave six basic components: constitutional body type, thinness of adipose tissue, metabolic rate, pulse rate condition, strength, and coordination in gymnastic and tumbling stunts (14 or 18-item motor tests).

Cardiovascular Components

From available evidence there seem to be at least five types of cardiovascular condition, each of which may be called a component. First, the autonomic nervous balance (component 1) is determined by blood pressure, pulse rate, and pulse wave tests in the quiet state, from palmar skin resistance or conductivity, or by noting the rise in pulse rate after injection of atropine (vagus tone). Second, splanchnic tone (component 2) is the distribution of blood against gravity as noted in the change in pulse wave, pulse pressure, or pulse rate in changing from lying to standing or from sitting to standing positions. After a subject stands for a minute, any tendency of the blood to settle into the feet, legs, or splanchnic region will result in a smaller pulse wave, reduced pulse pressure, or a rise in pulse rate.

Third, efficiency in long submaximal work (component 3) is the ability to work economically at a submaximal pace for a long time as indicated by pulse rate, blood pressure, pulse waves, and oxygen-intake tests. A rise in pulse rate, blood pressure, and oxygen consumption indicates reduced efficiency, as does also a reduced pulse wave. Fourth, efficiency in athletic (racing) endurance (component 4) is the ability to work relatively long at a pace that will develop an oxygen debt of 3 or more liters (maximal exercise) or to work a long time at a set pace on the treadmill or in the step test. The higher the oxygen consumption, the better. An oxygen debt above 3 liters is proof of entering a semiexhausted state but is not reliable.

Fifth, recuperation after exercise (component 5) is the recuperation of pulse rate after relatively hard exercise as in the five-minute step test. Various tests have emphasized measuring the postexercise pulse rate, blood pressure and blood lactate levels, pulse waves, and blood pH concentrations. Exercise of a severe type produces changes in these, but, so far, evidence that the all-out performances can be predicted from such data is unsatisfactory. Lucien Brouha assumed that this was so, but in a series of studies I demonstrated very low correlations as reported in a 1945 National Research Council study on "Endurance of Young Men." Craig Taylor had even earlier, in 1943, severely criticized use of the blood lactate test in a report to the National Research Council. The lack of validity of this test was explained in work by

Sacks and Sacks and Shaw, in which they pointed out that in human subjects the amount of blood lactate from venous samples taken after exercise does not indicate the total amount of lactate in the body. Some lactate spills over into the urine.

I summarized these objections to the blood lactate test in 1951 in "Physical Fitness of Champion Athletes." In addition, Montoye used the data from the Harvard fatigue laboratory in 1953 to restudy the relationship of the "recovery index" and blood lactate level (taken five minutes after exercise) and showed a correlation between them of –0.470, between lactate level and maximum pulse rate of +0.131, and between recovery index and maximum pulse rate of –0.637. After 12 weeks of training, the coefficients were –0.722, –0.782, and +0.665 respectively.

Montoye found the Harvard (Brouha) step test to be of limited value, because correlations with a wide variety of strenuous work criteria are in general very low. They were half-mile run time, –0.232; ergocycle time, 0.091; maximum number of sit-ups, 0.286; cross-country running speed, 0.38; mile run without training, 0.31, and after training, 0.54; 300-yard run time, –0.272; treadmill run time, 0.4; order of finish in the Boston Athletic Association cross-country marathon, 0.32. It is agreed by several workers that the pulse rate after exercise is sensitive to training. Training results in a lowered maximum pulse rate and lowered blood lactate levels during a standard exercise, but Taylor's correlations of these with all-out run time are too low (–0.56 and –0.44 respectively) to be of much value in predicting individual performance.

Athletic training affects all of these components, but very specifically. We found that in six weeks of training a young male subject improved at 7 miles per hour but not at 10 miles per hour, when he ran three miles per day at 6 to 7 miles per hour. Many top athletes in component 4 have been shown to be ordinary or poor in certain of the other components. It has been reported several times that all-out running times could not be predicted from components 1, 2, 3, or 4. Great confusion can be eliminated by calling these cardiovascular components what they are and using tests of component 4 to predict athletic endurance.

Skill, Coordination, and Fitness

As greater and greater skill develops as a result of continual practice, the experienced athlete is able to accomplish a given stunt or race with relatively less effort. It was surprising to find that experienced athletes do not develop any higher oxygen debt (internal oxygen deficit) than nonathletes. My 1948 study shows that 18 normal (untrained) young men averaged 7.37 liters of net oxygen debt compared to 7.23 liters for 20 experienced varsity athletes. However, the athletes had greater gross oxygen intake (6.89 liters) compared to the nonathletes (4.06 liters), an advantage of 22 in standard scores, or an advantage of 71.2%. The athletes develop the oxygen deficiency at a faster rate (0.062 liters per minute per kilogram of body weight) compared to the nonathletes (0.047 liters per minute per kilogram of body weight). Most of all, the athlete has a greater aerobic capacity and does no more of his work on anaerobic capacity than the untrained man. This explodes the value of the oxygen-debt test as a test from which endurance performance can be predicted.

When A. V. Hill figured the oxygen requirement as net oxygen intake plus net oxygen debt divided by time of effort, he was interested mainly in accounting for the oxygen cost attributed to the exercise, and, from this point of view, he is absolutely correct. From the point of view of which test is best to predict the time of the endurance effort, the gross oxygen intake (liters per kilogram of body weight) gives a validity correlation of +0.87 compared to +0.57 for Hill's oxygen requirement, while the correlation of net oxygen debt (in liters) is +0.19, practically worthless. Why then should this part be used at all? If we use the rate of oxygen debt, we introduce the time of the effort in the denominator, which, of course, correlates negatively with the time of the run as the criterion, and thus the correlation is –0.60 but is spurious.

The trained athlete is usually more skillful and, hence, more economical. He breathes better, saves himself whenever possible, and avoids tenseness in any muscle group that would hinder circulation. With experience he learns to relax as much as possible. He uses muscle effort exactly where it is needed and then relaxes to let the blood flow and deep breathing to occur. Frequently, such skill is merely attributed to experience. To observe Herb McKenley finish a 400-m. run—or Rhoden or Kelly—is to witness such controlled relaxation in action. In the Helsinki games, Dick Cleveland was apprehensive and he tightened up, ruining his chances in the 100-m. swim sprint; whereas, Clark Scholes, a cooler and more experienced swimmer, relaxed a bit more and had better circulation with which to win. Cleveland made his world's record before a small crowd and against less formidable competition in his homeland.

It is not the purpose of this paper to cover mechanics of athletic performance, but scientific analysis of many events has yielded formulas for analyzing events such as a swim, sprint run, shot put, discus throw, javelin throw, pole vault, high jump, and broad jump. The physical economy is represented in such formulas. Performances follow, first of all, physical laws; then physiological adaptations and psychological adjustments further modify the effort. No physical performance is a simple matter. Reference to studies in mechanical analysis can be found in Webster's "The Science of Athletics,' Bunn's "The Scientific Principles of Coaching," or in the research methods book of the American Association for Health, Physical Education, and Recreation.

The usual scheme of analysis is (1) to analyze the mechanics of the event; (2) to analyze the physical body build and aptitude of the performer; (3) to analyze the physiological fitness of the performer; (4) to analyze the psychological attitudes of the performer; (5) to get some physician to help remedy all health hazards, chronic ailments, or infections; (6) to prescribe developmental and conditioning activities for detectable weaknesses; (7) to plan a program of training to bring the performer to a peak at the needed moment; (8) to check the dietary regimen carefully

and suggest possible improvements; (9) to seek ways of observing and studying the most competent performers; and (10) to arrange a progressive schedule of competitions to season the competitor, realizing that this takes time.

Age, Performance, and Fitness

The evidence presented by Ernst Jokl indicates that lifelong physical training exerts a powerful influence on inhibition of the usual decline in physical ability, athletic efficiency, and health, but evidence that the immunologic resources of the body are affected is not available as yet, nor is it claimed with respect to the more virulent infectious diseases. Jokl's data on 1,609 men, aged 40 to 84 years, and 98 women, aged 32 to 52, was taken in 1952 at the National Gymnastic Festival for the Old in Marburg, Germany. The absence of degenerative diseases of the cardiovascular system, of neoplastic growths, and of kidney ailments among the older participants lead Jokl to the conclusion that the lifelong practice of gymnastics and other athletic sports had maintained their health and fitness in a remarkable way.

Over the past 50 years, in Europe and in the United States, there has been a general lengthening of the period of optimal usefulness of men and women. Today the trend is for people to mature younger—estimates indicate that the menarche in girls occurs five years earlier than in 1875—and they live longer. It is believed that this trend is accentuated by sports and regular physical training.

Diem studied the performance in the last three Olympiads to show that more and more the participants are both younger and older, with many in their teens and many over 40 years of age. Among the medal winners at the 1932 Olympic Games in Los Angeles were two 14-year-old Japanese schoolboys in the 1,500-m. swimming race, Kusso Kitamura and Shozo Makino, of Japan, who finished a length ahead of every other contestant. Among the medal winners at the 1948 games in London were the 16-year-old Japanese discus thrower, Ko Nakamura, the 18-year-old gymnast, Anita Barwirth, and the 17-year-old decathlon champion, Bob Mathias. While Jokl and Diem cite many others, old and young, in a similar relationship, our own data show that the former Olympic decathlon champion and world's high jump record-holder in 1924, Harold Osborn, at 51 years of age, has taken extraordinary physical fitness tests as shown by our laboratory tests in 1951 and 1952. In Finland, in 1952, it was impressive to see Paavo Nurmi still running well at 50 years of age and Hannes Kohlemainen run up the steps of the campanile (tower) at the stadium at 68 with an amazing demonstration of fitness. We found René Cochet, the great tennis star, fit and playing in the national tournaments at age 50. Jokl has estimated this advantage in tennis, as preventive of physiological aging, to be 6 to 10 years.

In our data on the all-out step test at 36 to 40 steps per minute, there is a surprisingly poor relationship of age to stepping time or to gross oxygen intake among 55 former athletic champions ($r = -0.566$). There is a slight trend for the younger subjects to develop a somewhat higher oxygen debt ($r = -0.364$). The total net oxygen cost was positively related to performance time ($r = +0.547$), but the rate of net intake oxygen was poorly related ($r = -0.341$ for liters per minute and -0.179 for liters per minute per kilogram of body weight). Several older men, who had maintained regular endurance training, still had relatively high gross-oxygen-intake capacity and were able to prevent any rise in the diastolic (phase 4) blood pressure. A few could still produce a drop, characteristic of a youthful competitor with a cardiovascular system still capable of making a good adjustment to hard endurance work. For instance, Harold Whitlock, many times walking champion, at 48½ years of age, with a starting blood pressure of 140/80 mm. Hg had 186/74 after stepping all-out for 2.17 minutes at 40 steps per minute on the 17-in. bench.

In the past few years we have accumulated evidence that favorable adjustment of the cardiovascular system, usually with marked reduction of peripheral resistance, accompanies systematic and progressive physical training of the endurance type. An example of this is shown in the table. We are led to believe that either physical training has been misunderstood or it has never been understood regarding this type of beneficial effect upon the cardiovascular system. By the use of Kellogg's tables of blood pressure related to expected loss of life, we have consistently shown the reduction of systolic and diastolic blood pressures, the increased stroke volume, larger pulse waves, and improved endurance in all-out treadmill running that accompany such training of six months to a year.

Change in Peripheral Resistance Associated with Physical Conditioning

An illustration is given of changing peripheral resistance in a 47-year-old subject as a result of five months of physical conditioning in 1953. The method used is simply that of substituting the pretraining figures of mean blood pressure (P_m), stroke volume (V_s), rate of heart beat (R) per second and solving for total peripheral resistance (TPR).

Pretraining:

$$TRP = \frac{P_m}{V_s \times R} = \frac{155}{29 \times 0.800} = 6.69 \text{ mm. Hg per cubic centimeter per second}$$

$$P_m = \frac{180+130}{2} = 155 \text{ mm. Hg} \qquad V_s = 29 \text{ cc./stroke} \qquad R = 48/60 = 0.800 \text{ second}$$

Post-training:

$$TPR = \frac{P_m}{V_s \times R} = \frac{128}{75 \times 0.867} = 1.97 \text{ mm. Hg per cubic centimeter per second}$$

$$P_m = \frac{158+98}{2} = 128 \text{ mm. Hg} \qquad V_s = 75 \text{ cc./stroke} \qquad R = 52/60 = 0.867$$

Ratio of pretraining to post-training total peripheral resistance, $6.69/1.97 = 3.40$ or 3.40 to 1.

(This equation is essentially that given by Wiggers in his book "Cardiac Dynamics." Henry has also made use of the same type of equation in a recent article and accredits the earlier work of Wezler and Böger.)

The subject was given five months of conditioning work, which consisted of a 30-minute period of conditioning exercises on the deck of a swimming pool, followed by a shower and a 20 to 25 minute swim in a regular swimming pool, 76-78 F in temperature. The exercises were led by an instructor five days per week. Once each week the exercises were of the "test-

exercise" type in which each exercise was done for as long as the subject could maintain it by voluntary effort.

By another calculation the volume elasticity was reduced from 3.45 to 1.60, a reduction of 53.6%. (The volume elasticity [E] equation is $P_s = V_s$ [TPR×R+ E/4] wherein, P_s=systolic pressure in mm. Hg and all other notation is the same as in previous equation.) Thus, we might say that the suppleness (give) of the large blood vessels above the heart was increased. It is not fully known how much of the effect is due to dilatation of the arterioles and possibly the capillary beds, but it would seem theoretically that both aspects had occurred.

cording to x-ray), the former champions showed greater proportionate stroke output per unit of heart size (3.489, compared to 2.599 for the comparable adult sample and 3.442 for young men). Their transverse heart diameters averaged 13.35 cm. (+4.73%), compared to 14.12 cm. for the comparable sample of adults and 13.1 cm. for normal young men (+0.60%). Comparison of the groups on an all-out step test for time and gross oxygen intake in the hard exercise showed the former champions to be superior to the comparable sample of the middle-aged, but both of these older groups were poorer in step-test time than the sample of young men. In gross oxygen intake the former champions were better than both other groups.

*Changes in Peripheral Resistance Associated with Physical Conditioning**

Subject	Test	Av. Pulse Rate, Beats/Min.	Av. Systolic Blood Pressure, Mm. Hg (182-118)	Av. Diastolic Blood Pressure, Mm. Hg	Av. Blood Pressure, Mm. Hg	Cardiac Output† Liters/Min.	Converted Cardiac Output‡ Liter/Min.	V_s Cc./Beat.	R Beats/Sec.	P_m/V_s-R	TPR	Duration of Training in Conditioning Exercises
1	T_1	52	150	118	150	6.47	7.91	152	0.87	150/132.2	1.130(6)	T_1 to T_2=5 mo.
	T_2	52	(144-106)	106	135	6.30	7.72	148	0.87	125/128.7	0.971(6)	(14.1% reduction)
2	T_1	60	124	74	99	4.68	4.98	98.8	1.00	94/98.8	0.908(3)	T_1 to T_2=5 mo.
	T_2	58	100	74	87	6.06	6.81	117.0	0.97	87/113.4	0.767(4)	(23.2% reduction)
3	T_1	72	126	70	98	5.56	6.90	95.8	1.20	98/114.9	0.853(4)	T_1 to T_2=5 mo.
	T_2	72	102	76	89	6.10	7.50	104.0	1.20	89/124.8	0.713(6)	(16.4% reduction)
				Control (Changes over 2 Mo.)								
4	T_1	60	100	75	88	5.48	6.82	113.7	1.00	88/113.7	0.774(5)	T_1 to T_2=2 mo.
	T_2	64	105	69	87	5.03	6.32	98.8	1.07	87/105.7	0.823(2)	T_2 to T_3=2 mo.
	T_3	58	100	76	88	5.24	6.55	112.9	0.97	88/109.5	0.804(4)	(3.88% increase)

* Data from McAdam and Cureton: unpublished data. The equation used for peripheral resistance is essentially the same as given by Wiggers in "Cardiac Dynamics." Henry uses the same but quotes the early work of Wezler and Boger. P_m = mean blood pressure sitting (or the average of lying and standing), including the sum of systolic and diastolic pressures divided by 2; V_s = stroke volume by Grollman method with correction by Keys method; R = heart rate per second; and TPR = total peripheral resistance = $P_m/V_s \times R$.
† Used Keys' correction for absorption coefficient.
‡ Used Keys' corrections for hyperventilation.

In comparison with the comparable normal adult sample of men measured on the same 128 tests, 55 former champions, averaging 44.39 years of age, 69.37 in. (176.2 cm.) in height, and 165.29 lb. (76 kg.) in weight, were more mesomorphic, more linear in skeletal build and had less fat. The former champions also had slightly wider shoulders, smaller hips, and smaller gluteal and abdominal girths; they also had better feet, were found to have stronger dynamometer strengths, and scored better results in cardiovascular tests (better Barach, Schneider, and five-minute step test scores, better results in brachial sphygmograms, and higher T waves in precordial leads 4 and 5). The average weight residual of 17.05 lb. (8 kg.) was greater than that of the comparable sample of adults and even greater than the result for normal young men, indicating greater tissue density because these former champions were stronger and had less fat. Our external fat index correlates +0.70 with Benke's hydrostatic weighing determination of total fat.

The lying and standing blood pressures were just average by the tables for general adults, but the pulse rates were considerably lower. There was no indication that the former champions show relatively greater strain or deterioration, but they instead had significantly stronger circulation, greater vagus tone, and larger precordial deflections in the electrocardiogram. In the ratio of the area of the brachial pulse wave to the frontal area of the heart in diastolic phase (ac-

The former champions had a strength per pound of body weight of 7.09 compared to 6.54 and 5.87 for the other two groups respectively. The vertical jump reaction times were 0.271 seconds (visual), 0.254 (auditory), and 0.245 (combined), being about 5 in standard scores above the adult average, as were also the results for the agility run and vertical jump. However, both adult groups were considerably poorer in all-out chinning and dipping endurance exercise than the young men, but here again the former athletes had deteriorated less than the comparable sample of men. A division of the former champions into three subgroups designated "in continued training," "moderately active," and "sedentary" showed statistically significant differences in favor of the group in training over the other two groups in practically all physical fitness test items.

Untreated Factors

No attempt has been made to cover all that could be said about psychological factors or sex or racial differences. I am conscious of this omission, but these factors must be treated in subsequent articles. Most of all, each event has its own special mechanics, psychological mind-set (motivation), weather conditions, and timing. No single event has been adequately covered, nor has the long-range effect of each sport.

Because of space limitations, a bibliography has been omitted from THE JOURNAL and will appear in the author's reprints.

NOVOBIOCIN FOR INFECTIONS DUE TO MICROCOCCUS PYOGENES

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• *Continued investigations show that infections owing to Micrococcus pyogenes (formerly known as Staphylococcus) often respond to novobiocin. The drug has been used successfully in the treatment of certain cases of bacteremia, soft tissue and bone infections, enterocolitis, urinary infections, postoperative meningitis, and infections of the respiratory tract in which the etiological agent has been M. pyogenes. In this study a dose of 500 mg. orally every six hours was used for moderately severe infections in adults. Side-effects occurred, mostly in the form of allergic dermatitis. The development of resistance to novobiocin by some strains of M. pyogenes has already been observed.*

Novobiocin is a new antibiotic that has been shown to be active against a variety of organisms but especially so against the micrococci. It has been concluded that streptonivicin,[1] produced by Streptomyces niveus; Cathomycin, produced by Streptomyces spheroides; and cardelmycin, formerly referred to as PA93, are identical, and the generic name of novobiocin is used for the antibiotic.[2] One of the important current problems in treatment of infectious disease is the management of infections attributable to strains of Micrococcus pyogenes that are resistant to many antibiotics. A number of infections caused by micrococci are difficult to control with the currently available antibiotic agents.

Herrell and two of us (D. R. N. and W. J. M.),[3] in 1953, described our results with the use of erythromycin for infections due to M. pyogenes. At that time, we wrote that erythromycin appeared to be an effective antibiotic in the treatment of these infections but speculated that its widespread use might result in the appearance of strains of micrococci resistant to that antibiotic. At the present writing, more than 15% of strains of M. pyogenes isolated from patients hospitalized in Rochester resist the action of erythromycin. Thus the possible addition of novobiocin to the antimicrococcic armamentarium is welcome.

In our preliminary observations on novobiocin [1] we concluded that there is no cross resistance between novobiocin and penicillin, streptomycin, chloramphenicol, the tetracyline group of compounds, neomycin, bacitracin, or erythromycin. We also presented laboratory evidence that indicated that M. pyogenes can become resistant to novobiocin. It was demonstrated that the drug is bound by serum proteins to the extent of at least 90%. Our studies indicated that novobiocin was effective in the treatment of an experimental infection with M. pyogenes in mice.

In another report on novobiocin [4] we tabulated the clinical results obtained in the treatment of 34 patients with infections due to a variety of organisms. The results of these preliminary clinical trials suggested that in novobiocin we had another effective therapeutic agent for the treatment of certain infectious diseases and that the agent had special application in infections caused by strains of M. pyogenes resistant to other antibiotics. The present paper constitutes a résumé of the data that we have accumulated on the drug and a report of our further clinical experiences with this new antibiotic agent in the treatment of infections caused by M. pyogenes.

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Absorption, Diffusion, and Excretion

When multiple doses of novobiocin, in amounts of 0.25 to 0.5 gm., were administered orally at intervals of 6 hours to 22 patients, levels of novobiocin in the serum were found to be substantial for at least 10 hours after the fourth dose.[1] On the average, the serum concentration 10 hours after administration of the last of four daily 0.25-gm. doses was 5.9 mcg. per milliliter; 10 hours after administration of the last of four daily 0.5-gm. doses it was 34.2 mcg. per milliliter. There is considerable variation in concentration of the agent in the serum after oral administration, not only from patient to patient but in the same patient after each dose. These data subsequently have been confirmed by other investigators.[5] Because of the possibility that the agent might accumulate or pile up in the serum after prolonged administration, the serum concentration of novobiocin was determined at 24-hour intervals for 12 days in 10 adult patients who were receiving the drug in amounts of 0.25 to 0.5 gm. at intervals of 6 or 8 hours for periods in excess of one week.[4] Since serum concentrations of novobiocin determined on the 12th day were not appreciably higher than those of the first day, it was concluded that appreciable accumulation or piling up of the drug did not occur.

In studies on the concentration of novobiocin in the cerebrospinal fluid and blood serum of nine patients without evidence of meningeal irritation who had received the agent, it was observed that the serum contained appreciable amounts of noviobiocin but that in no instance did the cerebrospinal fluid contain detectable amounts.[1] More recently, in a single patient with meningitis the agent was detected in the cerebrospinal fluid in small amounts. Additional studies indicated that novobiocin diffused readily into pleural fluid in three patients studied and into ascitic fluid in three patients studied. It was excreted in the bile in a

biologically active form in five patients, and it was present in thyroid tissue in five patients when appreciable amounts were present in the serum.[1]

After oral administration, fairly large amounts of novobiocin are excreted in the urine.[1] After oral administration fairly large amounts of the agent may be present in the feces; presumably some of the material is not absorbed.[1] In one patient who had received the drug for four weeks, detectable amounts of the agent were present in the serum, urine, and feces for at least 72 hours after cessation of treatment. Fecal specimens from patients receiving the agent by the oral route for five days contained novobiocin in amounts not appreciably greater than those from patients receiving the agent for only one day. Some of our data indicate that an inverse ratio may exist between the concentration of novobiocin in serum and the concentration in feces.[4]

TABLE 1.—*Results of Novobiocin Therapy* in Patients with Bacteremia Due to M. Pyogenes*

Case No.	Clinical Diagnosis	Source of Cultures	Doses, Total No.	Results
1	Bacteremia	Blood	120	Excellent; blood cultures negative within 72 hr., remained so
2	Bacteremia	Blood	27	Excellent; blood cultures negative within 72 hr., remained so
3	Bacteremia (after transurethral prostatic resection)	Blood and urine	27	Excellent; blood and urine cultures became negative, remained so
4	Bacteremia; chronic osteomyelitis, right femur	Blood and sinus of right femur	151	Excellent; sinus saucerized during therapy, and wound healed primarily; blood cultures became negative, remained so
5	Bacteremia; exfoliative bullous lichen planus	Blood and skin	11	Excellent initial response, but allergic dermatitis supervened; novobiocin therapy discontinued
6	Bacteremia; furuncle, neck	Blood and furuncle	46	Blood cultures became negative, remained so; streptomycin, 2 gm. daily, given simultaneously
7	Bacteremia; solitary kidney with nephrolithiasis	Blood and urine	44	Blood cultures negative during treatment and temperature became normal; blood cultures became positive on 12th day of treatment, and in vitro sensitivity tests indicated resistance on part of organism to agent; excellent response to erythromycin and streptomycin

*500 mg. given orally at 6-hr. intervals.

Dosage and Method of Administration

The oral dosage of novobiocin that we have employed in the treatment of infections caused by organisms susceptible to its action is as follows: For infections of moderate severity, we have administered 500 mg. (2 capsules) every six hours to adults. For less serious infections, we have given the agent in the same dose at 8-hour and 12-hour intervals. For minor infections, we have given 250 mg. every six to eight hours. For very young children and infants, we have employed 100 mg. in a special capsule or in a syrup vehicle every six to eight hours. We have administered 500 mg. of novobiocin by the intravenous route at 12-hour intervals and 250 mg. of the agent by the intramuscular route every 6 or 8 hours without apparent systemic ill-effects.[4]

Clinical Results

Because the bacterial spectrum of novobiocin includes the micrococci and because the substance is absorbed well after administration by the oral route, diffuses well into most of the body tissues and fluids

TABLE 2.—*Results of Novobiocin Therapy* in Patients with Infections of Skeletal System and Soft Tissues Due to M. Pyogenes*

Case No.	Diagnosis	Source of Cultures	Doses, Total No.	Results
8	Osteomyelitis, left foot (tarsal, scaphoid)	Left foot	30	Cultures became negative; drainage ceased
9	Osteomyelitis, right femur	Right femur	30	Cultures became negative; drainage ceased
10	Osteomyelitis, lumbosacral bone grafts	Sinus tract	49	Spinal fusion elsewhere; cultures became negative; drainage ceased
11	Osteomyelitis, left tibia	Left tibia	69	Sinus saucerized during therapy and wound healed primarily
12	Osteomyelitis, lumbosacral bone grafts	Sinus tract	243	Spinal fusion elsewhere; surgical wound granulated and skin graft took
13	Postoperative wound infection (radical neck dissection on right for carcinoma)	Right cervical region	42	Purulent drainage ceased and wound gradually healed
14	Cellulitis area of necrosis after injection of levarterenol)	Left leg	17	Novobiocin administered intramuscularly; M. pyogenes eliminated from wound
15	Postoperative wound infection	Drainage from thigh	21	Drainage ceased; wound healed
16	Cellulitis	Left buttock	16	Subsided without incision
17	Postoperative subphrenic abscess on left (splenectomy for secondary hemolytic anemia)	Left subphrenic abscess	10	Patient died, apparently of homologous serum hepatitis
18	Postoperative wound infection (epithelioma, jaw)	Wound	27	Drainage ceased; wound healed
19	Postoperative wound infection (partial hemilaminectomy and decompression)	Drainage from lumbosacral region	36	Drainage ceased; wound healed
20	Draining sinus tract, left knee (after patellectomy)	Left knee	31	Sinus tract excised; primary healing; allergic dermatitis developed
21	Postoperative subhepatic abscess (partial gastrectomy)	Subhepatic abscess	41	Drainage ceased; wound healed
22	Diabetic gangrene	Left great toe	39	Infection controlled; allergic dermatitis developed
23	Infected amputation stump	Amputation stump, left arm	30	Drainage ceased; cultures became negative; grafting without complication
24	Wound infection	Wound	30	Treatment failed; recurrent liposarcoma probably made healing virtually impossible
25	Infected actinodermatitis, left hand	Left hand	25	Cultures became negative; drainage ceased
26	Infected burns, right hand	Right hand	99	Cultures became negative; drainage ceased; successful grafting
27	Infected actinodermatitis, dorsum right foot	Right foot	41	Cultures became negative; successful grafting
28	Suppurative panniculitis, right thigh	Right thigh	34	Infection controlled but severe allergic dermatitis requiring corticotropin (ACTH) developed; recovery
29	Postoperative subdiaphragmatic abscess (cholecystectomy)	Abscess	42	Cultures became negative; drainage ceased

*500 mg. given at 6-hr. intervals, except that dose was 100 mg. in case 1, 250 mg. in case 14, and 250 mg. at 8-hr. intervals in case 29.

studied, lacks cross resistance with other antibiotics, and apparently has a low order of toxicity, we were prompted to use it in the treatment of 53 patients who had micrococcic infections. Twenty-one of the 53 patients have been referred to previously.[4]

Micrococcic Bacteremia.—The results obtained with novobiocin in micrococcic bacteremia are shown in table 1. These data indicate that novobiocin has application in this type of infection, since use of the agent coincided with sterilization of the blood stream in five of these seven patients. In one case the supervention of allergic dermatitis made withdrawal of novobiocin necessary. In one case the bacteria showed increased resistance on in vitro testing and cultures of the blood again became positive after 11 days of treatment.

TABLE 3.—*Results of Novobiocin Therapy* in Patients with Postoperative Micrococcic Enterocolitis*

Case No.	Operative or Clinical Diagnosis	Doses, Total No.	Results
30	Carcinoma of sigmoid	20	Diarrhea under control in 48 hr.; recovery
31	Carcinoma of colon	15	Flora of stool reverted to normal in 48 hr.; recovery
32	Carcinoma of colon	48	Diarrhea ceased, and stool cultures became negative; on 5th day after novobiocin therapy discontinued, enterocolitis recurred; again, novobiocin eliminated micrococci from stools
33	Carcinoma of colon	49	Novobiocin administered through nasal suction tube; stool cultures became negative, remained so
34	Carcinoma of stomach	21	Diarrhea ceased, and stool cultures became negative; allergic dermatitis developed
35	Carcinoma of colon	20	Diarrhea under control in 48 hr.; however, M. pyogenes exhibited increase in resistance to agent during treatment
36	Regional enteritis (hemicolectomy and excision of enterocutaneous fistula)	17	Flora of stool reverted to normal in 48 hr.; recovery
37†	Pneumonia (Friedländer's)	21	Pneumonia responded to tetracyline and streptomycin; micrococci isolated from stool and sputum specimens; diarrhea subsided, and stool cultures became negative
38	Duodenal ulcer (partial gastrectomy)	8	Diarrhea ceased, and stool cultures became negative
39	Polyp, splenic flexure (segmental resection)	25	Diarrhea ceased, and stool cultures became negative
40	Chronic ulcerative colitis	26	Had been receiving neomycin when severe diarrhea recurred; diarrhea ceased, and stool cultures became negative
41	Cholelithiasis and choledocholithiasis	27	Diarrhea under control in 72 hr.; recovery
42	Micrococcic bacteremia	40	Excellent response of bacteremia to erythromycin, but organism became resistant to that agent; organism was sensitive to tetracycline, but enterocolitis developed during use of that agent; excellent response of enterocolitis to novobiocin; bacteremia did not recur

*500 mg. given orally at 6-hr. intervals.
†Nonsurgical.

Infections of the Skeletal System and Soft Tissues.—In 22 cases novobiocin was used in the treatment of infections of the skeletal system and soft tissues due to M. pyogenes. The source of culture in these cases, doses used, duration of treatment, and results obtained are shown in table 2. A satisfactory clinical result was observed in 20 cases. It is recognized that evaluation of an antibiotic in this type of infection may be fraught with intrinsic error, since other measures, including surgical treatment, were used concurrently.

Micrococcic Enterocolitis.—Novobiocin was used in 13 patients with micrococcic enterocolitis. In all 13, after oral administration of novobiocin in the doses indicated in table 3 the flora of the stools reverted to normal. Within 24 to 72 hours clinical improvement was evident, and similar results are expected in the future, provided novobiocin-resistant strains are not encountered more frequently.

Miscellaneous Micrococcic Infections.—Eleven of our 53 patients were classed as having miscellaneous infections. The diagnosis, source of culture, and other pertinent data are summarized in table 4. There were two examples each of urinary infections, postoperative meningitis, pneumonia, and infections of the upper part of the respiratory tract that were eliminated after use of novobiocin. One case each of purulent sinusitis and liver abscess is also included in this group. In one case the presence of obstruction in the urinary tract probably made eradication of the infection impossible. The clinical results in 48 of these 53 cases of micrococcic infection were satisfactory and appeared equivalent to those expected with other available antibiotics.

TABLE 4.—*Results of Novobiocin Therapy* in Miscellaneous Infections Due to M. Pyogenes*

Case No.	Clinical Diagnosis	Source of Cultures	Novobiocin Dose, Mg.	Doses, Total No.	Results
43	Bilateral maxillary sinusitis	Maxillary sinus	250	49	Had bilateral antrotomy; subsequent cultures negative
44	Hydrocephalus, postoperative meningitis	Cerebrospinal fluid	100	76	Cultures became negative; child died
45	Pneumonia	Sputum	500	36	Roentgenograms of chest became normal and cultures of sputums became negative; allergic dermatitis developed
46	Pneumonia	Sputum	500	72	Roentgenographic clearance definite but slower than preceding case; cultures of sputums became negative
47	Postoperative meningitis (Torkildsen procedure)	Cerebrospinal fluid	250	72	Cultures became negative
48	Liver abscess	Abscess (at operation)	250	38	Became afebrile, but result doubtful
49	Pharyngitis	Throat	125	32	Novobiocin given intramuscularly; tracheotomy considered initially; excellent result; cultures became negative
50	Urinary infection	Urine	500	21	Cultures became negative
51	Acute tonsillitis	Throat	500	19	Excellent response
52	Urinary infection	Urine	500	25	Cultures became negative
53	Urinary infection (nephrocalcinosis)	Urine	500	42	Treatment failure

*Dose given at 6-hr. intervals except in case 49, in which it was given at 8-hr. intervals.

Toxicity

The most frequently encountered untoward reaction after the oral administration of novobiocin has been, to date, allergic dermatitis. Mild gastrointestinal irritation, manifested by slight abdominal cramping, nausea, and an increased number of liquid stools, has been noted but has not required discontinuance of therapy. No patient receiving the agent has been

recognized as having thereby suffered damage to his kidneys or hemopoietic system. It has been calculated that the treatment of a total of 348 patients by various investigators resulted in a skin rash during treatment in 31 patients (8.9%).[6] Five of the 53 patients on whom we are presenting data at this time displayed allergic dermatitis. Welch and associates[6] have suggested that the incidence of skin rashes may be related to the dose of novobiocin and to the number of days of treatment and reported that lesser doses of the drug (0.5 gm. twice daily) are less likely to be complicated by allergic skin reactions.

Comment

We have indicated that novobiocin appears useful in the treatment of infections due to M. pyogenes. The agent may prove to be a special boon in the treatment of infections with micrococci that are resistant to other antibiotics. Because of this problem of antibiotic resistance one should consider seriously the virtual restriction of use of this new agent to infectious states caused by such insensitive organisms. The occurrence of allergic dermatitis in patients receiving this agent also indicates the need for special care in the distribution of novobiocin. It does not appear that the use of novobiocin will be complicated by micrococcic enterocolitis because of the agent's inability to eradicate Escherichia coli, Aerobacter aerogenes, and Pseudomonas organisms. It is effective against some strains of Proteus vulgaris and Streptococcus faecalis.[4] Parenteral administration of the agent appears to produce adequate concentrations of novobiocin in the serum.[4]

In two patients the M. pyogenes isolated after a period of treatment with novobiocin required a greater concentration of the antibiotic to inhibit growth than did the M. pyogenes isolated before treatment. In case 7, the M. pyogenes isolated from the patient's blood stream on initial in vitro testing was susceptible to the action of the agent in amounts of 1 mcg. Cultures of the blood became negative during treatment but on the 12th day of therapy again were positive. The M. pyogenes at that time resisted novobiocin in amounts of more than 3 mcg. The organism in case 36 demonstrated a parallel ability to resist the agent. We have described in previous communications[7] the extreme rapidity with which strains of M. pyogenes can also exhibit ability to resist the action of erythromycin. Nichols and Finland[8] have also described strains of micrococci that exhibited significantly increased resistance to novobiocin during treatment. We are currently investigating the possibility that combinations of other antibiotics and novobiocin may delay or discourage the emergence of resistant strains of M. pyogenes.

Because of experimental data accumulated on dogs, initially it was feared that novobiocin might prove hepatotoxic to man. Case 18 concerned a victim of agnogenic myeloid metaplasia in whom it was necessary to resort reluctantly to splenectomy because of the demonstration of a severe secondary hemolytic anemia. The patient's terminal status was compatible with homologous serum hepatitis, and examination at autopsy failed to disturb that hypothesis. However, because of the agent's possible ability to exert an ill-effect on the liver we are continuing to evaluate recipients of the drug from that point of view. We have not as yet encountered the yellowing of the scleras described by other investigators.[6] There is evidence that such discoloration can result from the deposition of a yellow pigment produced by the metabolism of novobiocin.[6]

Summary and Conclusions

Clinical experience with novobiocin in micrococcic infection is thus far encouraging. Only further experience will determine to what degree Micrococcus pyogenes may develop resistance to this antibiotic. Novobiocin proved effective in the treatment of five of seven patients with micrococcic bacteremia. In the remaining two patients, the supervention of allergic dermatitis in one and the development of antibiotic resistance in the other made discontinuance of therapy necessary. Satisfactory clinical response coincided with the use of novobiocin in infections of the skeletal system and soft tissues in 20 of 22 cases. In 13 cases of micrococcic enterocolitis the flora of the stools reverted to normal. Novobiocin was apparently effective in miscellaneous infections due to M. pyogenes, including postoperative meningitis, pneumonia, and upper respiratory and urinary tract infections. Continued study of the clinical application of this antibiotic appears warranted.

The novobiocin used in this study was supplied as Albamycin by the Upjohn Company, Kalamazoo, Mich.

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Mass Casualties.—Because there are no experts with experience in managing mass casualties, many impractical and academic thoughts have been expounded as gospel. The basic principles of military surgery, based on proper selection of patients, still are sound. Mass casualties still will be composed of the types of injuries we are accustomed to treat, and the difference will be in the extremely large numbers and the suddenness of their occurrence. Proper sorting of patients and decision as to what can be accomplished must be based on an accurate estimation of the situation from the standpoint of the caseload requiring care as contrasted with the availability of trained personnel and supplies. Adequate functioning in time of disaster will depend on prior planning, a definite chain of command with delineation of authority, and a suitable organization which takes into account all of the elements needed to find, evacuate, resuscitate, and treat the injured. A training program, broad in scope but not requiring surgical judgment of laymen, is essential. Less talk, more common sense, and some action would seem to be highly desirable.—W. F. Bowers, Principles of Surgery in Managing Mass Casualties, *United States Armed Forces Medical Journal*, June, 1956.

TREATMENT OF ACUTE CYANIDE POISONING

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• *Two cases of acute poisoning by the inhalation of hydrogen cyanide are described. The first patient regained consciousness 40 minutes after his collapse; in the interval he was treated with inhalations of amyl nitrite and intravenous injections of 0.3 gm. of sodium nitrite and 12.5 gm. of sodium thiosulfate. The second patient remained stuporous during the five hours that followed her collapse; during that interval she received inhalations of oxygen and carbon dioxide and of amyl nitrite as well as an intravenous injection of 0.6 gm. of sodium thiosulfate. Much improvement followed the intravenous injection of 50 cc. of a 1% solution of methylene blue. No dramatic effects were obtained from alternating injections of sodium nitrite and sodium thiosulfate in her case. Both patients made complete recoveries.*

Since the publication of our last report[1] on the treatment of acute cyanide poisoning with nitrite-thiosulfate therapy, several interesting papers have appeared. Lurie[2] described a case of poisoning by hydrocyanic acid from fumigation that responded favorably to infusions of corticotropin (ACTH). Verne and Biez-Charreton[3] found that cortisone in vitro restored normal oxygen consumption of fragments of rat cerebral tissue and striated muscle treated with small amounts of potassium cyanide. Verne, Herbert, and Barbarin[4] also demonstrated that prior injection of cortisone protected rats partially against potassium cyanide injected intraperitoneally. Clemedson, Hultman, and Sörbo[5] showed that a previous injection of rhodanese and ethanethiosulfonate raised the median lethal dose of hydrocyanic acid for rabbits 15 to 20 times. Mushett and associates[6] proved that in mice intravenous injection of hydroxocobalamin (vitamin B_{12} a) prevented death from potassium cyanide poisoning by conversion to cyanocobalamin (vitamin B_{12}), which could be detected in the urine. Wood and Cooley[7] discovered that in rats cystine detoxified cyanide by a new, independent pathway—the formation of 2-imino-4-thiazolidinecarboxylic acid, which was excreted by the kidneys.

Several experimental findings are of academic interest, such as the control of the ability to smell potassium cyanide by a sex-linked recessive gene as shown by Kirk and Stenhouse.[8] Further the claim that achlorhydria renders a person resistant to the effect of alkali salts of hydrocyanic acid has been disproved.[9] In contrast to the higher mammals, bacteria are not harmed by cyanides. In fact, they are able to utilize the nitrogen of the poison to make their proteins.[10]

The efficacy of amyl nitrite or sodium nitrite, or their combination with thiosulfate, in the treatment of cyanide poisoning has been repeatedly confirmed experimentally and clinically.[11] The same method is apparently applicable to the poisoning by acetone cyanohydrin, which readily dissociates to free cyanide, as shown in rats by Sunderman and Kincaid.[12] Potter[13] of England reported in detail two cases of industrial poisoning by hydrocyanic acid that promptly responded to nitrite-thiosulfate medication. Both patients were unconscious, and one of them developed convulsions during poisoning, but both recovered completely after the intravenous injection of the antidote. Radonić and Dimnik[14] of Yugoslavia used inhalation of amyl nitrite to save the life of a man who had attempted to commit suicide by swallowing 3.75 gm. of potassium cyanide. The success of therapy in this case is unusual, since the maximal methemoglobinemia from amyl nitrite inhalation in normal subjects does not exceed 5%, as determined by Paulet.[15]

The technique of treating acute cyanide poisoning as previously recommended[1] needs little modification. In a case of suicide, management should start with simultaneous inhalation of amyl nitrite and gastric lavage. If poisoning is accidentally caused by the inhalation of hydrocyanic acid, the gastric lavage is omitted. Intravenous injection of sodium nitrite (10 cc. of a 3% solution) and sodium thiosulfate (50 cc. of a 25% solution) completes the course of treatment. As emphasized previously, success of the treatment depends much on speed and preparedness. It is therefore desirable to have a special kit on hand containing perles of amyl nitrite, ampuls of sodium nitrite and sodium thiosulfate, sterile syringes with needles, and a stomach tube. A long-term aging experiment with the ampuls at our laboratory showed that sodium nitrite was stable in water for more than 21½ years and sodium thiosulfate for more than 17½ years. The latter assayed 6.26 gm. instead of 10 gm. on Nov. 10, 1955, the ampuls having been made on April 20, 1934.

The two case histories presented here bring to 49 the cases of acute cyanide poisoning treated with nitrite-thiosulfate therapy. Forty-eight of these cases resulted in recovery.

From the Lilly Research Laboratories.

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Report of Cases

CASE 1.—A man, aged 39, who was running a chemical reaction of a manufacturing process in a tank, inhaled hydrogen cyanide gas that had leaked around a gasket of the manhole cover. As he made his way toward fresh air, he collapsed and became unconscious. His supervisor, being familiar with the management of cyanide poisoning, carried the victim to the outside, administered amyl nitrite by inhalation, and sent for the plant physician. All this took five minutes. In another 10 minutes the physician arrived and, with the assistance of a nurse, injected intravenously 0.3 gm. of sodium nitrite and 12.5 gm. of sodium thiosulfate. In 40 minutes from the time of poisoning, the patient regained consciousness and was able to go home. He returned to work after being advised to stay home for one day. This case illustrates very clearly the importance of alertness and quick action in achieving the best results.

CASE 2.—A woman, 41 years old, entered a house that was being fumigated, in an attempt to rescue a boy who had been overcome by hydrocyanic acid gas. As she dragged the boy out, she collapsed. She was brought to a hospital at once. She vomited, her respiration was very shallow, and her face was flushed. She was given oxygen and carbon dioxide inhalation, supplemented with amyl nitrite inhalation. Two hours from the time of poisoning, she was given by vein 0.6 gm. of sodium thiosulfate (6% solution). Four hours later the patient was stuporous, and her respiration dropped to 12 per minute. In another hour methylene blue (50 cc. of a 1% solution) was injected intravenously, and much improvement followed. In the evening she was given by vein 500 cc. of 5% dextrose in isotonic sodium chloride solution, and throughout the night she was also given five alternating doses each of 0.1 gm. of sodium nitrite and 1.5 gm. of sodium thiosulfate (total nitrite: 0.5 gm.; total thiosulfate: 7.5 gm.).

The next morning the patient appeared drowsy, pale, and cyanotic and complained of backache. Ephedrine sulfate, 25 mg. in 0.5 cc. of water, was administered intravenously. In the afternoon and evening a series of five alternating injections of sodium nitrite and sodium thiosulfate were made as on the preceding day, including 500 cc. of 5% dextrose in sodium chloride solution. A slight elevation of blood pressure and fall of heart rate were observed, attributable to the action of the ephedrine. On the third day of illness, the woman still complained of backache and also of headache but took some food. Her general condition had improved, and her body temperature was normal. On the fourth day more elaborate physical examinations and laboratory analyses were conducted, but no abnormalities were disclosed. The patient's headache and backache persisted, but her general condition was satisfactory. She was discharged on the eighth day after poisoning. For some reason the results from treatment in this case were not as dramatic as those in others. The patient appeared to pass the acute emergency at the end of the third day and made her full recovery on the fourth day. The last few days of her hospitalization were for the completion of examinations.

Summary

Two more cases of acute poisoning by hydrocyanic acid have been successfully treated with nitrite-thiosulfate therapy. They raise the number of recoveries to date to 48 out of 49 cases.

Case 1 is reported with the permission of Dr. James D. Peirce, Indianapolis, and case 2 with the permission of Dr. Thomas A. Peppard, Minneapolis.

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Methods of Vascular Reconstruction.—The best method of restoring the continuity of a blood-vessel is by a direct suture either of a lateral defect or by an end-to-end anastomosis. It is difficult to discover who was the first to suture a lateral defect in a blood-vessel. Hopfner in 1903 published a review of the literature, and he stated that Lambert of Newcastle was the first surgeon to write about vascular suture and that Hallowell in 1759 was the first to perform it on a patient. He sutured a lateral defect in a brachial artery, the limb survived but it is not certain whether the vessel remained patent or not. The first end-to-end anastomoses were probably performed by Murphy (1897). The modern technique of vascular anastomosis using two or three stay sutures and then a continuous everting mattress or over-and-over suture of fine silk was worked out by Carrel (1907) and has not altered since. In our view, a direct anastomosis should be employed whenever it is anatomically possible; it is the ideal method of repairing an injury, and it is surprising how often it is possible to close the gap by direct suture after a diseased segment of an artery or vein has been resected. This is particularly so in patients with arteriosclerosis. An arteriosclerotic artery is often lengthened and tortuous; this after mobilization allows the surgeon to close a fairly long defect by direct suture. During the past five years we have repaired the arteries of six elderly patients in this way. A typical example was a man aged 74: during the course of an operation for carcinoma of the mouth a mass of lymph-nodes was found to be adherent to the common carotid artery, 3.5 cm. of this vessel was resected and after some mobilization a direct end-to-end anastomosis was performed. This patient lived for four-and-a-half years before he died from another cause.—C. G. Rob, H. H. G. Eastcott, and K. Owen, The Reconstruction of Arteries, *The British Journal of Surgery*, March, 1956.

CLINICAL NOTES

HANDLING OF INCISIONAL HERNIAS AROUND PERMANENT COLOSTOMIES AND ILEOSTOMIES

Amos R. Koontz, M. D., Baltimore

Not too infrequently incisional hernias occur about a permanent colostomy or ileostomy and the patient finds himself with a huge bulging hernia with his colostomy or ileostomy right in the center of it. I have operated upon three such patients and wish to report the method I used in handling these cases.

Report of a Case

A 59-year-old robust man had a Miles operation in May, 1954. He promptly developed a hernia, which was repaired by the surgeon who had operated upon him. The hernia recurred and was again repaired by the same surgeon. It recurred again. The patient then went to another surgeon, who made two attempts at repairing the hernia without success and then referred the patient to me. On examination the patient was found to have a huge incisional hernia, principally to the left of the midline, with a colostomy opening near the center of it (fig. 1). The defect was 10 in. long in the transverse direction, extending from a point to the right of the midline into the left flank. It was approximately 5 in. wide in the vertical direction. The patient was admitted to the Johns Hopkins Hospital on Feb. 2, 1956.

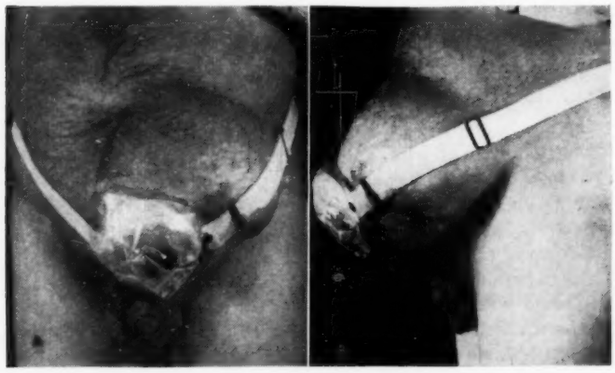

Fig. 1.—*A*, anterior view of patient before operation, showing hernia with colostomy cup in place over the colostomy opening. *B*, lateral view of patient before operation, showing the hernia with colostomy cup in place over the colostomy opening.

His intestine was prepared for the transfer of the colostomy opening from the center of the hernia to the lateral abdominal wall.

Transfer of Colostomy Opening.—On Feb. 7, 1956, with the patient under spinal anesthesia, an incision was made around the colostomy opening and a small cuff of skin was left attached to the colon. The colostomy was transferred to a McBurney incision on the right, and the cuff of skin that had been left attached to the colon was sutured to the skin edges of the McBurney incision. The opening in the hernial area, from which the colostomy had been removed, was bounded by structures consisting only of skin, very little subcutaneous tissue, and peritoneum. The subcutaneous tissue and peritoneum were closed with 0 chromic absorbable surgical suture, and the skin was closed with continuous sutures of fine black silk. At 12:30 a. m. the next morning, I was told that the patient had coughed violently and disrupted the wound from which the colostomy had been transferred. The new colostomy site, however, was firm. After transfer to the operating room, with the patient under local anesthesia, through-and-through mattress sutures of heavy braided silk were placed in such a fashion as to pucker up the skin edges and bring peritoneum against peritoneum. The wound was covered with collodion and a scultetus binder applied. After this the patient did very well, except that he developed some necrosis of the skin edges and consequently some infection in the wound that had been disrupted. He also developed rather severe diarrhea. In spite of this, he was prepared for definitive repair of his huge hernia.

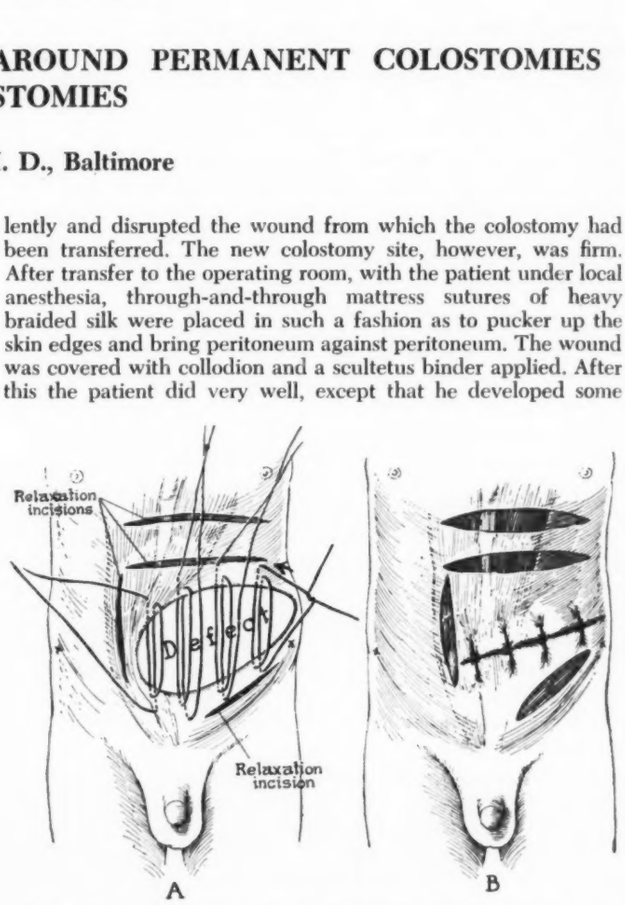

Fig. 2.—*A*, relaxation incisions made to bring fascial edges together. There is a longitudinal one in the sheath of the right rectus muscle; there are two tranverse relaxation incisions in the abdominal fascia above the hernial defect; and there is another relaxation incision in the aponeurosis of the left external oblique muscle. The far-and-near tension sutures have been placed but not tied. *B*, condition after far-and-near tension sutures were tied. It will be noted that there was considerable broadening of the relaxation incisions. The spaces between the tension sutures were sutured with 000 tantalum wire.

Repair of the Incisional Hernia.—This repair was proceeded with on Feb. 18, 1956, with the patient under spinal anesthesia. A transverse elliptical incision was made around the old sloughing wound from which the colostomy had been removed, and the entire infected and sloughing wound was removed with as little contamination of the abdominal cavity as possible. There were several loops of intestine adherent to the undersurface of this wound, and these loops were rather raw looking and markedly distended. In fact, most of the small intestine was distended. A Cantor tube had not been passed before operation for fear that it would cause the patient (who was very sensitive) to struggle and again disrupt his wound. Due to the distention of the intestine, it was found impossible to reduce it into the abdominal cavity with the patient awake. Cyclopropane anesthesia was therefore started. No thiopental (Pentothal) sodium was given, because the patient had some wheezing and it was thought that he might have asthma. The abdominal cavity was explored as well as it could be, and no involved glands or nodules in the liver were found. The hernial sac was dissected free and the fascial edges were cleared in all directions from it, undermining the umbilicus. It was found to be totally impossible to close the hernial defect in a longitudinal direction, but it was thought

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possible to close it in a transverse direction after making sufficient relaxation incisions. A longitudinal relaxation incision was made in the sheath of the right rectus muscle, and two parallel transverse relaxation incisions were made across the sheaths of both rectus muscles above the defect. Another relaxation incision was made in the aponeurosis of the left external oblique muscle. After making these relaxation incisions, it was found possible to approximate the edges of the defect with far-and-near tension sutures of heavy braided silk (fig. 2). The sac was excised, and the edges of the defect were approximated by the tension sutures. The approximation was made under considerable tension. The intervals between the heavy tension sutures were sutured with 000 tantalum wire. It was felt, however, that this closure would not result in a cure of the hernia, as it was made under too much tension. The entire area was therefore covered with a 6-by-9-in. piece of tantalum sutured in with 000 tantalum wire; the edges of the gauze were not turned under. Two 18 F. catheters with multiple holes in them were placed through stab wounds in the left flank and connected with continuous suction immediately after operation.[1] The subcutaneous tissue was closed with 000 chromic absorbable surgical suture and the skin with continuous sutures of fine black silk.

It had been planned not to use any silk in this hernia repair at all, because it was known that the wound was contaminated. No silk was used except for the heavy far-and-near tension sutures. I was afraid to use wire for these sutures as I felt sure that it would cut through. No other silk, however, was used. Absorbable surgical suture was used for ligatures and tantalum wire for all other sutures.

Convalescence.—The patient's convalescence was exceptionally smooth, and there was never any evidence of infection locally or in the peritoneal cavity. Suction was discontinued and the two catheters shortened on the fourth day. They were removed on the sixth day. Following this, the patient developed a little serous fluid in his wound, 15 cc. being aspirated on Feb. 29 and 5 cc. each on March 1 and March 3. The patient flew to his home in a western city on March 3. The referring surgeon was heard from on March 23 saying that patient had a fine result (fig. 3), his

Fig. 3.—*A*, anterior view of patient 10 days after operation. The wound is firm and the colostomy working satisfactorily. *B*, lateral view of patient 10 days after operation.

operative site was firm, and his colostomy working satisfactorily. The patient's wife said on March 25 that his wound was fine and that his colostomy was so regulated that he had only to wear a small pad over it. It was no longer necessary to use his colostomy bag.

Further Cases

I have operated upon one other patient with a case exactly like the one just described, except that the colostomy and the hernia were in the midline instead of slightly to the left of it. The colostomy was first moved into a high McBurney incision on the left, and about 10 days later repair of the hernia was proceeded with. In this case also the repair was made with tantalum gauze, and tantalum wire was used as suture material, while absorbable surgical suture was used for ligatures. The third case was that of a patient with a permanent ileostomy in the midline following a colectomy for ulcerative colitis. He developed a huge incisional hernia in the midline scar below the ileostomy. However, there was a bridge of fascia about three-fourths of an inch wide between the ileostomy and the upper edge of the hernial defect. In view of this, it was not necessary to transfer the ileostomy to another site. The hernia was repaired just as in the other two cases.

Despite the fact that there was possible contamination of the wound in all of these cases, I felt no hesitancy in using tantalum, as much experimental work and many experiences had taught me that tantalum did not give trouble in the presence of infection.[2] I was careful, however, not to use silk or cotton in the wounds, as any infection in the presence of these materials would have definitely caused trouble. In all three cases tantalum wire was used as suture material and absorbable surgical suture for ligatures.

Summary

In two cases huge incisional hernias developed around permanent colostomies, with the colostomies in the center of the hernias. In another case a large hernia developed in an incision just below a permanent ileostomy. However, a narrow band of fibrous tissue between the ileostomy and the hernial defect made repair of the hernia possible without transfer of the ileostomy.

1014 St. Paul St. (2).

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Histoplasmosis.—A group of 663 children who had resided in all parts of the United States and abroad and were now living in middle Tennessee were tested for skin sensitivity to histoplasmin and to tuberculin. Of the 663 initially tested, 93 (14 per cent) reacted to histoplasmin and 17 (2.6 per cent) to tuberculin. Only 4 (0.6 per cent) reacted to both antigens. Ten cases of active tuberculosis, including one of early tuberculous meningitis, were discovered by means of this study. Sensitivity to histoplasmin was rare in infancy and rose with increasing age. There were no sex or seasonal differences. Children who had spent the majority of their lives in states bordering the midportions of the Mississippi and Ohio Rivers exhibited the greatest incidence of histoplasmin sensitivity. The likelihood of a positive reaction also increased with duration of residence in this area (middle Tennessee). The sensitivity rates found in this investigation were lower than those reported by others for native children in the east central United States because of the rigid technics of testing and interpretation employed and the fact that many of the subjects had resided mainly in areas where less opportunity for exposure to the infecting organism existed. The findings in this study confirm reports of others that in the central portion of the United States histoplasmosis is a more common cause of pulmonary calcification than is tuberculosis. The results of family studies are evidence against person-to-person transmission of the infection.—H. D. Riley Jr., Epidemiologic Studies of Histoplasmin Sensitivity, *United States Armed Forces Medical Journal*, June, 1956.

RESECTION OF ENTIRE ASCENDING AORTA IN FUSIFORM ANEURYSM USING CARDIAC BYPASS

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and
Michael E. De Bakey, M.D., Houston, Texas

Fusiform aneurysm of the ascending aorta is a common form of aortic disease and is associated with a grave prognosis. Although excisional therapy is now established as the method of choice for aneurysms of the aorta, this form of treatment for aneurysms of the ascending aorta has been limited until the present time to sacciform lesions in which the neck is relatively small. In such instances tangential excision of the aneurysm with lateral aortorrhaphy may be curative if the adjacent aortic wall is not also involved by the degenerative process. In fusiform aneurysms and in most extensive sacciform lesions this method of treatment cannot be utilized and segmental resection of the ascending aorta with homograft replacement is necessary. Because of the fatal consequences from even brief occlusion of the ascending aorta, no aneurysm in this anatomic location has been treated successfully by segmental aortic resection. This report is concerned with a case of successful resection of the ascending aorta for an aneurysm with homograft replacement and with use of temporary cardiac bypass and a mechanical pump oxygenator.

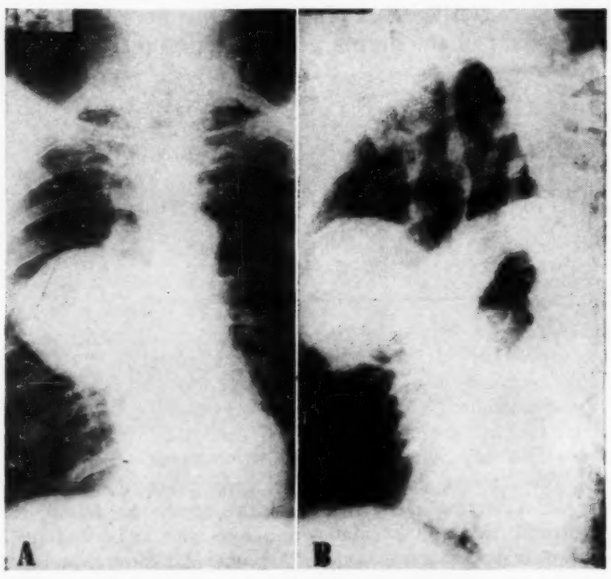

Fig. 1.—Roentgenograms of chest, showing, *A*, mass about 9 cm. in diameter in right superior mediastinum and, *B*, an oblique view of the aortogram confirming the diagnosis of aneurysm of the ascending aorta partially filled with thrombus.

Report of a Case

A 50-year-old male was admitted to Jefferson Davis Hospital on Aug. 18, 1956, complaining of increasing chest pain of several years' duration. About 25 years previously he had been kicked in the chest by a horse, but the first diagnosis of aortic aneurysm was made seven years later on routine roentgenography. No history of syphilis was obtained. Physical examination revealed an abnormal pulsation that was maximum in the right second intercostal space adjacent to the sternum and moderate venous distention in the right supraclavicular region. Blood pressure was 110/70 mm. Hg. There were no cardiac murmurs and there was no enlargement. Neurological examination was normal. Laboratory studies revealed a normal hemogram and urinalysis. Serologic tests for syphilis were negative. The electrocardiogram was also normal. Roentgenography and fluoroscopy of the chest revealed a pulsatile mass approximately 9 cm. in diameter in the right superior mediastinum projecting anteriorly, and aortography confirmed the diagnosis of aneurysm (fig. 1).

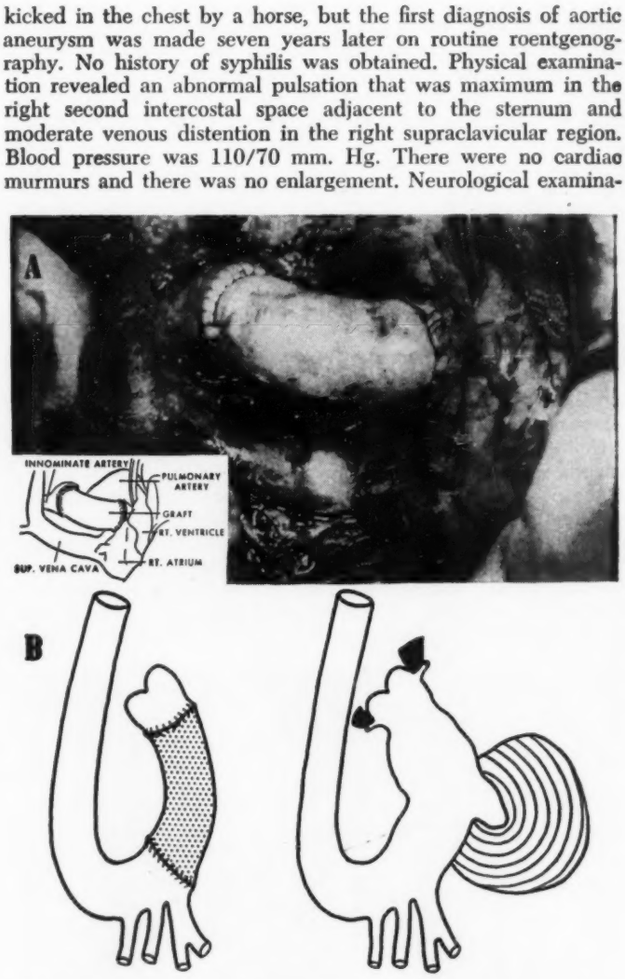

Fig. 2.—*A*, photograph made at operation, showing the homograft replacing the ascending aorta from just above the coronary ostia proximally to base of innominate artery distally. *B*, Drawing made from aortograms, showing location of lesion in ascending aorta and the method of surgical correction with aortic homograft.

Bilateral thoracotomy was performed on Aug. 24 through the right fourth and left third intercostal spaces, and the sternum was divided in the midline upward to the suprasternal notch. The aneurysm was extensive, originating just above the coronary ostiums within the pericardium, and involved the entire ascending aorta to the origin of the innominate artery. The aorta was encircled with traction tapes proximal and distal to the lesion. A temporary cardiac bypass with a modified DeWall-Lillehei pump oxygenator was used, with a blood flow rate of 35 cc. per kilogram body weight per minute, or approximately 2,800 cc. per minute total. Most of the oxygenated blood was returned to the arterial system via a catheter

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threaded into the abdominal aorta through the right femoral artery. A small catheter was placed in the right common carotid artery for cerebral perfusion at 200 cc. per minute during occlusion of the innominate and carotid artery.

The cardiac bypass was begun with total inflow occlusion, and the ascending aorta at the coronary ostiums was cross-clamped. Distally the aortic arch and innominate artery were occluded proximal to the left common carotid artery. The ascending aorta was resected and a sterile frozen aortic homograft was inserted into the defect using continuous sutures of 000 arterial silk (fig. 2). About 10 minutes after the bypass was commenced, cardiac standstill occurred, and no attempt at cardiac resuscitation was made until the clamps on the aorta were released after 31 minutes of total perfusion. Cardiac massage was then instituted, restoring myocardial tone while the pump oxygenator still functioned. Ventricular fibrillation ensued but was promptly corrected with two electric shocks of 110 volts, 1.5 amp. Vigorous cardiac action resumed with a sinus rhythm. Bleeding from the graft was not severe and the

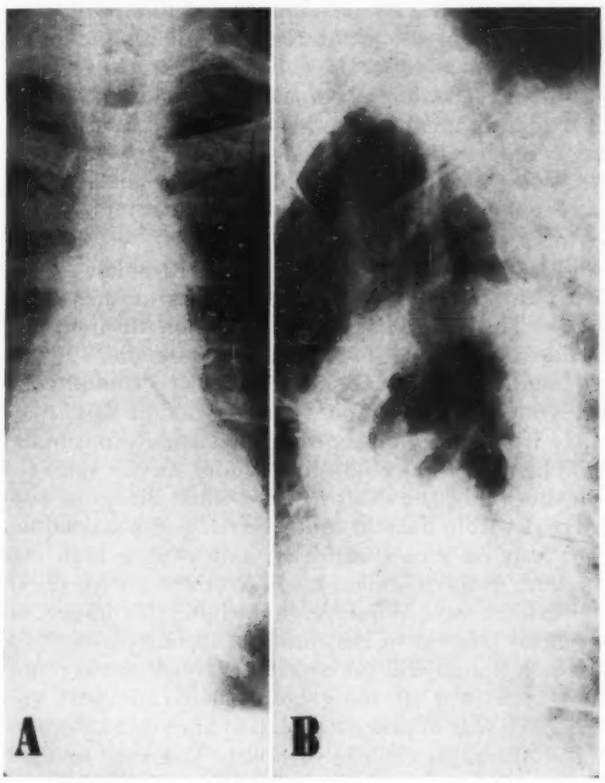

Fig. 3.—Roentgenograms of chest made three weeks after operation, showing, *A*, absence of mediastinal mass and, *B*, satisfactory function of the graft.

heparin sodium given prior to the bypass was counteracted with a similar quantity of protamine sulfate injection. The incision was closed, and bilateral subaqueous drainage was used.

Postoperative recovery was uneventful, and the patient was discharged from the hospital on Sept. 13, approximately three weeks after operation. Roentgenograms and aortograms revealed satisfactory healing and function of the graft (fig. 3).

Comment

This case demonstrates the feasibility of temporary cross-clamping of the ascending aorta during 30 minutes of cardiac bypass without artificial perfusion of the coronary vessels. Although cardiac standstill occurred, resuscitation was easily accomplished, and, because the same procedure may be tolerated for even longer periods in the experimental animal, it appears that the method is practical and relatively safe in terms of myocardial circulation. Presumably the coronary orifices were temporarily occluded in this patient by the proximal clamp, but, in instances in which the clamp is applied distal to the coronary ostiums, blood remaining in the left ventricle will perfuse the coronary system during the period of aortic occlusion and cardiac bypass. Another important feature in the recovery of this patient was the success of temporary carotid perfusion, which indicates that this method may be modified slightly and used in resection of the entire aortic arch for aneurysm.

Summary and Conclusions

Excisional treatment of aneurysms of the aorta is widely accepted as the best method for such lesions, but application of this method to certain anatomic regions of the aorta is technically difficult. Segmental resection and homograft replacement for extensive aneurysms of the ascending aorta presents a complicated technical problem, because temporary cross-clamping of the aorta at this level is rapidly fatal. In a 50-year-old man, the entire ascending aorta was successfully resected with homograft replacement with use of temporary cardiac bypass.

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Protein Needs in Surgical Patients.—Following World War II. . . . hundreds of wounded soldiers, sailors, and marines, [who] returned to our country from the far-flung theaters of war for final treatment. . . . showed . . . evidence of protein deficiency, such as anemia, hypoproteinemia, cachexia, indolent looking wounds, nutritional edema, and so on. . . . Beattie found the same thing in England, and then clearly demonstrated how protein added to the diet improved the healing process. . . . Many American surgeons . . . have emphasized the prevalence of protein and other nutritional deficiencies and the importance of preventing or correcting them before and after operation or injury. . . . In regard to the . . . protein-deficient patient there is an advantage in considering two protein compartments, i. e., the fixed tissue proteins which are large, and the circulating proteins (plasma protein and hemoglobin, which are relatively small. . . . Plasma and hemoglobin deficits are relatively easy to correct, thanks to the ready availability of blood banks. Tissue protein deficiencies are best corrected by oral feeding, yet many patients have such profound anorexia that they will not ingest anything but simple liquids which usually contain no protein. . . . It is often necessary to resort to tube feedings. . . . In a few patients the gastrointestinal tract cannot be used; here parenteral feeding is the only way to prevent inevitable starvation. Protein alimentation in this way is now possible by the infusion of adequate mixtures of amino acids and polypeptides (hydrolyzed protein). . . . This method closely imitates the natural method by which protein is absorbed from the gastrointestinal tract as amino acids and polypeptides. . . . This relatively new method of protein feeding equals and may in some cases excel the benefits of a smaller protein intake by mouth. But let me emphasize that intravenous feeding does not and cannot compete with oral feeding. Intravenous feeding competes only with starvation. In fact, in successfully combating starvation during periods when the gastrointestinal tract cannot be used, it restores or maintains the patient . . . that oral feeding can be started and increased much sooner. Intravenous protein feeding, when properly used, not only does not compete with oral feeding, it actually encourages and facilitates resumption of the normal method of eating temporarily interrupted by surgical or other disease.—R. Elman, M.D., Protein Needs in Surgical Patients, *Journal of the American Dietetic Association*, June, 1956.

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THE OLYMPIC GAMES

GUEST EDITORIAL

Allan J. Ryan, M. D.

Sport is an old word in the English language, dating back to at least 1440. Originally meaning any pastime or diversion, it soon came to refer particularly to games carried on in the open air and to a series of athletic contests; a little later, to the endeavor to take or kill wild animals, game, or fish. Ancient philosophers and physicians were unanimous in condemning the profession of athletics as injurious to the mind and body. Nevertheless, throughout history, physicians have continued to interest themselves in the effects produced accidentally and deliberately on the body by individual and group exercises in all forms. The quadrennial recurrence of the modern series of Olympic Games, to be held this November in Melbourne, Australia, provides an appropriate opportunity to present a brief symposium indicating the scope and variety of this interest through the years and at the present time.

The opening essay reviews the development of the ancient and modern Olympic Games, indicating the parts played by physicians, directly and indirectly, and some of the contributions made by athletes from the United States. Giuseppe LaCava tells the story of the development of an international organization of physicians and others with related interests devoted to the study of interrelated problems of sport and medicine. This is followed by a condensation of a series of articles by Dr. Ludwig H. Joseph relating the history of medical interest in the therapeutic uses of gymnastic and other athletic exercises from the earliest times through the 18th century.

Modern scientific interest in the physiology of exercise, in the development and application of methods of testing and measurement, and in the specific relation of utilizing the observed results to improving athletic performance is epitomized in the study of the relation of physical fitness to athletic performance by T. K. Cureton. The application of these methods to the study of a specific problem, namely, whether a period of warming-up produces a better performance by the athlete, is exemplified by the report of Peter Karpovich. Robert Kiphuth discusses, from the standpoint of the director of physical education and athletic coach, the importance of continuing regular exercise to maintain physical fitness. Van Itallie, Sinisterra, and Stare emphasize the importance of psychological as well as physiological aspects of diet in the training programs of athletes, bringing to bear in their discussion the most recent findings in the field of nutrition.

The interest of the physician in protecting the athlete from injury and minimizing the effects of the injuries that occur in sports is discussed by Augustus Thorndike. He points out that the careful and accurate accumulation of figures regarding sports injuries has yet to be achieved on a wide scale and, also, that the coach has a particular responsibility in the preparation of the player, since the well-trained and well-conditioned competitor is less apt to be injured. Henry Montoye and his associates resurvey the often debated question as to whether the college athlete lives as long as his more sedentary classmate. They find that, except for a slightly greater number of deaths due to violent causes in later life, he does. Finally, a compendium of the scope of activities of physicians themselves as sportsmen, and particularly as competitors in the Olympic Games, is presented.

Within the past year, President Eisenhower has called two meetings of sports leaders at the White House. The result has been a decision to appoint a Presidential Council on Youth Fitness at the Cabinet level and to create a Citizens' Advisory Committee to this council. Motivation for this action has come partly from the often repeated and widely misunderstood figures on rejections for military service since the reinstitution of the draft in the United States in 1940 and partly from the still controversial findings resulting from tests on school children, indicating a high rate of failure in the so-called Kraus-Weber tests for physical performance. Whatever its origin, this indication of official interest in the question of our physical fitness as a nation will be welcomed by all those physicians interested in the relation between sport and medicine. The appearance of two such organizations as the American College of Sports Medicine and the Western Council of Sports Medicine within the past few years gives further indication that we are on the threshold of an even greater interest in the scientific study and development of sport in the United States.

THE A. M. A. AND SPORTS INJURIES

Just a year ago this month, a 16-year-old boy of Fort Edward, N. Y., tried to block a kick for his high school football team. He died of a ruptured spleen. A week earlier, in a high school football game in South San Antonio, Texas, a 17-year-old boy collided with another player while jumping for a pass. He died of a hemorrhage of the brain stem.

By this time next week at least two more American boys may die from football injuries. That has been the average weekly death toll during the football season over the past quarter-century. While the game has

been made safer, at least 1,000 young men have died in all sports during that period. Football takes more casualties than all other athletic games combined.

What are doctors doing about it? Within two weeks, a new American Medical Association Committee on Sports Injuries will meet in Seattle to consider recommendations suggesting certain rule revisions that would give more protection to athletes. Meanwhile, the A. M. A. Bureau of Health Education is continuing over 45 years of work with educational authorities to help make school sports and physical education programs safe and wholesome. This is done in meetings with high school athletic groups and educational association officials, articles in *Today's Health*, and pamphlet reprints from that magazine.

As a result of such cooperative effort by doctors, educators, and coaches, some 20 state high school athletic associations now have medical advisory committees. Two months ago the Orange County Medical Association of Santa Ana, Calif., sponsored an Athletic Injury Clinic, which attracted 50 coaches from 15 high schools and junior colleges.

It is rare indeed to find a community that does not have a doctor serving on the school board, as the school physician, or as a team doctor. Over 25 U. S. physicians today once were college football stars. Thirteen of them coached before, during or after medical school. Among them are Drs. Edward N. Anderson, John W. Wilce, Clarence W. Spears, and Marvin A. Stevens. The Secretary of the new A. M. A. Committee on Sports Injuries, Dr. Harold P. Muller, also is one of these "medical All-Americans."

The first team doctor in recorded history, Claudius Galen, tended the gladiators of Marcus Aurelius in 200 A.D. Today at Harvard University there is a staff of six surgeons, six physiotherapists, a dietician, a radiologist, and numerous coaches and trainers serving the college sports program. Doctors at the aeronautical laboratory of Cornell University are working to improve equipment, so that football and other sports can be safer. Other physicians serve as design consultants to athletic-equipment manufacturers. Elsewhere, Dr. Charles Lombard and his associates have been conducting electronics and speed movie research on the efficiency of various types, sizes, and shapes of football helmets and helmet liners.

Throughout the nation, there is rising medical interest and action in athletic matters—particularly at the high school level. There, where sports participation is the greatest, more than half of all football deaths have occurred in the past 25 years (at least one in every state and in Hawaii and Canada). There the A. M. A. Bureau of Health Education is concentrating its efforts.

Together with educators and coaches, this bureau is pointing out the character-building advantages of football, and the danger of young boys playing too many games in one season; the teamwork value of the game, and the necessity for regular physical examinations of players and for a physician on the bench; and the body-building potential of football, and the body-destruction of ill-fitted uniforms and lack of preplay warm-up.

Football can be a killer and a maimer, but for the player it is also a wholesome and valuable experience that—like life itself—can be made safer. American medicine, having helped make life safer and longer, is facing the new challenge.

SOME MEDICAL ASPECTS OF FREEDOM

The physician who attends athletes professionally is but one of many people who make decisions as to what is likely to favor, and what is likely to impair, athletic performance in competition. The decisions have to be clean-cut, and when competition rises to the climaxes of national or international events the accompanying tensions become terrific, as in the famous tennis match between Budge and von Cramm at Wimbledon in 1937. Everybody, from the coaches and masseurs to the purveyors of food and equipment and the designers of clothing and shoes, becomes emotionally involved to a degree that is often dangerous.

That many decisions on questions of hygiene in the past have been made without an adequate basis in fact is only natural. But the extent to which mere habit, faddish notions, pseudo-science, and downright superstition have at times influenced such decisions is amazing. Sometimes the medical scientist is called upon to clear the air of some of these obfuscating elements; at other times he finds he has become involved in efforts to justify some peculiar idea by *ad hoc* research. In the athletic situation, when he sees the confusion continue in spite of his efforts, he can generally console himself with the thought that, after all, athletics is not real life but only a formalized rehearsal for it; that most sports like fishing and archery are but stylized survivals of antique methods of food-getting; that athletes are free men who can ignore recommendations that do not appeal to them; and that only individual careers are at stake. He can look indulgently upon the athlete who carries a rabbit's foot, and can forgive the agitated coach who makes his protégé munch a handful of high-protein tablets between trials in a weight-lifting match.

Evidence is accumulating, moreover, to show that a normal person can judge his needs pretty well by his own feelings and impulses. This evidence comes not only from laboratory experiments on self-selected diets, on the thirst mechanism, on the regulation of respiration, on postural adjustments to circulatory needs, and on innumerable other manifestations of the "wisdom of the body"; it comes also from psychiatric observations on the survival value of neuroses and psychoses and from everyday examples of outstanding success achieved by people who were essentially self-taught. Except for recent disconcerting experiences with such things as tasteless poisons and unperceived ionizing radiations, it appears that instinct is a rather valuable guide to hygiene in normal people, provided they are free.

It is when people are not free, and when they are dependent in large numbers on the decision of one person, that the stage is set for large-scale tragedy.

The bread-and-water diet that used to be considered so wholesome a punishment for prisoners; the pitiful fare that used to be considered good enough in almshouses and orphanages; the embalmed foods that used to bring visitations of scurvy to whole fleets; the intolerable lack of sanitation that used to make it impossible for prisoners to keep themselves clean; the poor ventilation that spread sickness among miners and factory workers—all show how wrong mankind has often been in matters of hygiene, and what a misfortune it was when there was no escape from conditions so created.

The question as to what is best for people has sometimes been difficult or impossible to answer. An example has been the difficulty of determining the most healthful temperature and humidity to be maintained by air-conditioning systems in large buildings. It has proved to be much easier to determine the most comfortable temperature and humidity, and what one finds in the textbooks of the physiologist and the ventilating engineer is not equal-health curves but equal-comfort curves. Health and comfort may not be synonymous, but they are very closely related. The patrons of restaurants and theaters are free to come and go; and what attracts them in the way of air conditioning must be considered, prima facie, as wholesome.

It is cheering to see the critical attitude that has developed toward conventional ideas of training and fitness programs and to witness the painstaking accumulation of evidence on most questions. From the observations assembled by Van Itallie and his associates (see this issue, page 1120), it is clear that the training table for athletes is no longer a place for the infliction of peculiar dietary notions on people but is recognized simply as affording an assurance of familiar, reliable food and an important psychological influence. From the facts assembled by Karpovich and his associates (page 1117), it is clear that an athlete in general should be allowed to follow his own convictions as to his method of warming up. Forcing any one diet or any one method of warming up on a whole group of athletes could have, statistically, only one result: it would not improve those for whom it happened to be optimal, and it would handicap those for whom it was not optimal. Moreover, any iron-clad ukase that prescribes for the average person is a hardship for the "unaverage"; it must inevitably hamper the many processes of adjustment whereby the individual differences within a group are smoothed over. A mistake in a prescription for a nation is a large-scale disaster, like the country-wide withdrawal of that popular vasodilator, alcohol, from the American scene in 1923. Those who want a welfare state either will have to eliminate every nonconformist and nonaverage person or else will have to settle by scientific research every last little detail about our physical and mental lives. Opinions or orders that are repugnant to a person's instincts, intuition, and personal experience must be backed up by truly substantial, uncommonly convincing scientific evidence. If we ever lose our freedom to a welfare state, that state will have to be not only omnipotent, but also omniscient.

THE MEDICAL EXPERT WITNESS

In October, 1955, the American Medical Association Law Department sponsored the first of a series of regional medicolegal symposiums. Part of the program included a demonstration of the right and wrong way to prepare and examine the medical expert witness. In the months that have followed, this demonstration has been repeated 11 times at the request of medical societies and bar associations and has been given at medicolegal institutes or meetings conducted under the joint sponsorships of medical and bar associations. The popularity and usefulness of the demonstration, amply proved by the demands for it and the attendance at these programs, have resulted in its being used as the basis for a film titled "The Medical Witness."

At the clinical meeting of the Association this film will have its premiere. It will be shown on Nov. 27, at 8 p. m., in the Olympic Bowl of the Olympic Hotel, Seattle. Signifying its important contribution in developing better medicolegal relations, David F. Maxwell, President of the American Bar Association and David B. Allman, M.D., President-Elect of the American Medical Association, will introduce the film to an audience that will include physicians and attorneys. C. Joseph Stetler, Director of the A. M. A. Law Department, who wrote the original script and directed its live production, will also be present to point out that the medicolegal symposiums sponsored by the Association and the film itself are designed to develop a high degree of rapport between the professions of medicine and the law. After the Seattle premiere, the 35-minute film will be available on request and without charge to medical societies, bar associations, and schools of medicine and law for use in their local programs.

"The Medical Witness" is the first of a series of six medicolegal films sponsored by the Wm. S. Merrell Company of Cincinnati, in cooperation with the American Medical Association and the American Bar Association. It represents the culmination of an effort by the American Medical Association to help correct deficiencies and abuses in the field of medical-expert testimony. While many organizations and groups have attempted to eliminate the "battle of experts" as the problem has arisen in individual communities and on specific occasions, the American Medical Association has directed its efforts to reaching a solution applicable on a nationwide basis.

The importance of medical testimony today is graphically illustrated by the fact that it is required in from 60 to 85% of all litigation. The Association has tried, on behalf of the medical profession, to develop and improve the quality of medical evidence expected under our method of judicial procedure. This film emphasizes the importance of the role and the duty of the medical-expert witness and is designed to aid the doctor who will be called as a witness. It is hoped that full use will be made of this film and the ones that will follow.

ORGANIZATION SECTION

A. M. A. CLINICAL SESSION IN SEATTLE

For the first time in history the Pacific Northwest will be host to the Clinical Session of the American Medical Association Nov. 27-30. Doctors from all over the United States, its territories, and Canada will be on hand to attend scientific sessions and closed-circuit television programs and to view hundreds of scientific and technical exhibits, all at Seattle's Civic Auditorium.

The scientific program will be directed toward the general practitioner. Subjects have been carefully chosen to be of practical value, according to Dr. M. Shelby Jared of Seattle, General Chairman. Well-known medical educators and physicians from all parts of the United States will present papers and contribute to panel discussions. Forty-five papers will be presented, considering fluid balance, urologic problems, office psychiatry, varicose veins, fractures, diabetes, heart disease, and other subjects. Twenty panel discussions will be held, on such topics as hypertension, hemolytic anemia, prenatal care, problems of aging, epilepsy, low back pain, liver disease, and vascular disorders.

Television programs will originate at Doctors Hospital and will be viewed by audiences at the Civic Auditorium by means of a closed circuit. Both operative and nonoperative clinics will be presented, on such subjects as block anesthesia, treatment of burns, bleeding problems, intestinal obstruction, cesarean section, hand surgery, hysterectomy, and vein stripping.

The A. M. A. House of Delegates, which convenes at each of these yearly events to determine policies of the medical profession, will meet at the Olympic Hotel during the Seattle session. Plans have also been made for a symphony concert and banquets for officials, delegates, and alternate delegates of the A. M. A. and their wives; in addition, sightseeing tours and other events are planned for members of the Woman's Auxiliary.

Dr. Hale A. Haven of Seattle is Program Chairman for the Seattle meeting. Other committee chairmen, all of Seattle, are Dr. F. A. Tucker, Television; Dr. Wilbur E. Watson, Housing and Transportation; Dr. Sydney J. Hawley, Entertainment; and Dr. Eric R. Sanderson, Publicity.

ORGANIZATION, OBJECTIVES, AND PROGRAM OF THE JOINT BLOOD COUNCIL

Leonard W. Larson, M.D., Bismarck, N. D.

It hardly seems possible that blood banking as we know it today, with all its refinements to ensure that blood for transfusion purposes is safe, was practically nonexistent 20 years ago. World War II served as the stimulus for research that led to the development of improved methods for the collection and storage of whole blood and its fractionation. Blood banks, large and small, in and out of hospitals, sprang up all over the United States, and the Red Cross blood program was developed and expanded. However, during the five-year interval between the conclusion of World War II and the outbreak of the Korean conflict in the summer of 1950, blood banking, from the national viewpoint, was a completely uncoordinated activity. Little is to be gained by a rehash of the conflicts that arose between the Red Cross blood program and the private blood banks (commercial, community, and hospital). They were due to philosophical differences and, more important, to the lack of a coordinated national program to which all parties concerned could give their wholehearted approval and support. The Boston Agreement was an honest attempt to prevent chaos and ensure the collection of adequate quantities of safe whole blood for shipment to Korea, but in some instances, because of differing interpretations of its language and intent, it served as the basis for conflict. Fortunately, blood was made available for the military, and, at the same time, civilian needs were met.

Organization and Objectives

Despite the complications and confusions, and sometimes the noisy conflicts, there were many who were convinced that a national organization, on a voluntary basis, which would stimulate and guide blood research, was imperative to ensure an adequate supply of safe blood for civilian needs and to meet any national or local emergency. These individuals convinced their parent organizations to join in the movement to form such an organization. As a result, the Blood Foundation was organized under the auspices of the American Hospital Association, the American Association of Blood Banks, the American Society of Clinical Pathologists, the American National Red Cross, and the American Medical Association. It was incorporated under the laws of the state of Illinois on March 16, 1955. The Articles of Incorporation were amended in August of last year, changing the name of the organization to the Joint Blood Council, Inc. It was believed that this name was more appropriate and descriptive; also the state of Illinois thought there were so many organizations using the name "foundation" that it was almost meaningless.

In its papers of incorporation the council describes its purpose as follows:

> To develop ways and means to make blood and its derivatives available to all persons in the United States; to stimulate and advise on areas of research in the collection, preservation, and use of blood and its derivatives; to collect, study and disseminate information on blood and blood derivatives; to establish minimal standards for voluntary accreditation of blood banks and to establish a means of inspection for accreditation; to coordinate existing systems and encourage and institute plans where necessary for the exchange of blood or blood credits between accredited banks on a state, regional and national basis; to encourage the public through appropriate means to donate blood for civilian and defense requirements and to assist in the establishment of uniform national publicity policies; to disseminate annually a list of blood banks accredited by this organization; to serve upon invitation as a fact-finding and arbitration body in disputes arising from the collection and use of blood and its derivatives; to serve upon invitation as an advisory group to federal and military agencies having to deal with blood and its derivatives.

A great deal of thought and care and consultation had to go into deciding on the role of this new council. The council itself would not procure blood; it would

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President, Joint Blood Council.

Read before the ninth Annual Meeting of the American Association of Blood Banks, Boston, Sept. 4, 1956.

not process blood; it would not store blood; and it would not engage in research. What then would it do? Operating primarily through its member institutions and allied organizations, the council would attempt to stimulate and to coordinate all worthwhile national operations in the entire field of blood. The main point is that the Joint Blood Council was under way. It has already solved some problems, and it has others to face. It is doing something that had not been done before, and it is moving ahead, cautiously perhaps, but it is moving ahead, and in the right direction. The policies of the council are determined by a board of directors, which consists of two representatives from each of the five constituent organizations. Participation, of course, is completely voluntary on the part of the member organizations. Upon due notice they may withdraw from the program; provision is made for admitting additional organizations.

In the event of a national emergency or disaster, the council's bylaws state:

> It is the objective of the Joint Blood Council to establish Emergency Blood Donor Centers in communities not served by existing blood bank facilities or to bring about expansion of existing facilities in order to procure the necessary amount of blood for both defense and civilian requirements. This program now is the responsibility of the American National Red Cross and associated private blood banks by contractual arrangements with the Federal government. The method to be used in establishing such centers shall be determined in a manner which meets the approval of the county medical society and the local blood banks and hospitals. Furthermore, consistent with government regulations, the operation of the local blood bank facilities for civilian need should not be interfered with by the emergency program.

On the question of charges for blood, the bylaws state:

> Since blood is derived from human beings only, it should not be sold for profit. However, all services rendered in the collection, storage and administration of blood cost something and are paid for by or on behalf of every recipient of such services. When a service charge is made to the recipient, it may include all or part of the costs of the operation, including normal depreciation but the intentional realization of substantial profit is not approved.

On the question of blood replacement, the bylaws encourage an adequate program of voluntary donations:

> The manner by which replacement is accomplished should be determined locally and all possible recruitment methods should be used—whether before or after the administration of blood. The recipient and the community should recognize their responsibility for the replacement of blood through relatives, friends, clubs, fraternal organizations, unions, cooperatives, churches or community units.

Program of the Council

The first meeting of the board of directors was held on May 7, 1955, and was occupied primarily with the election of officers and administrative details. Another meeting of the board was held on June 10, 1955, and, in addition to considering further administrative details, such as the establishment of a headquarters office, it formed a scientific committee, with Dr. Max M. Strumia, of Bryn Mawr, Pa., as chairman. Dr. Frank E. Wilson, of Washington, D. C., was elected executive vice-president and secretary of the council at a meeting of the board in October of last year, and he established a headquarters office for the corporation in downtown Washington, D. C., on Nov. 1, 1955. The staff of the council is made up of only Dr. Wilson and his administrative assistant, Mrs. Burie M. Lambert.

Not long after the council opened its headquarters we received a letter of encouragement from President Eisenhower. He said:

> The newly formed Joint Blood Council has embarked upon a program of significant importance to all Americans. The many problems involved in bringing together on a cooperative basis the blood banking facilities of the country is a humanitarian effort in keeping with the American tradition.
>
> Our people need a nationwide blood service, coordinated not only to take care of national emergencies, but to make available to them in time of peace the blood and its derivatives necessary to save life wherever the requirement may arise.

Scientific Committee.—Early this year specific functions were assigned to the scientific committee. High on the list is the development of minimal standards for voluntary accreditation of blood banks and the development of ideal methods for blood-bank procedures that will ensure safe blood for the recipient. Also, the committee is to study and make recommendations on new research developments and advise on their possible application to routine blood-bank work. It is to explore ways and means of stimulating the development of facilities for studying unusual serums and red blood cells and for making these serums and cells available. In addition, it is to set itself up as an advisory committee to serve the council and to act as liaison between it and the federal and local agencies in all scientific aspects of blood banking and research.

This committee has already met and made certain recommendations to the board of directors relating to many of these functions. Its first report announced that the committee was under way with the task of developing minimal standards for voluntary accreditation of blood banks and that it was in accord with the board's opinion that some needed information should be obtained through a nationwide survey of blood banks and research centers. The committee reported the need for stimulating research in the following areas: (1) long-range storage of the red blood cells; (2) practical means of platelet preservation; (3) preparation and testing of antihemophilic globulin; (4) effect on the red blood cells of water-repelling surfaces; (5) further investigation of anticoagulant procedures, such as ion exchange resins to replace citrate in the operation of blood banks, to make possible continuous use of large quantities of blood as required in some operative procedures; (6) continuance of the work to eliminate as donors possible carriers of serum hepatitis virus, or sterilization of the blood itself; (7) recommendations for ideal transfusion equipment insofar as it affects the quality of the formed elements but not necessarily the safety, already considered by the minimum requirements.

Committee on Blood Insurance Problems.—A special committee on blood insurance problems under the chairmanship of Dr. Walter B. Martin of Norfolk, Va., rendered a report to the board, and from the work of this committee the Joint Blood Council adopted its first specific policy. This policy will attempt to persuade health and accident insurance companies to (1) limit their coverage to the cost of voluntary procurement, processing, and dispensing of blood and (2) encourage Blue Cross to include in its coverage the cost of processing and dispensing, without any form of donor payment or professional fee.

A paid donor system is adaptable to certain large cities and particularly to areas around well-established medical schools, hospitals, and teaching centers, but it is not broadly applicable to the country as a whole. Traditionally, this method of procurement goes back to the early days of direct blood transfusions. If the present machinery for utilizing voluntary donors were allowed to go into disuse, it would be difficult to reactivate it in the event of any national emergency. The widespread extension of insurance covering payments to donors will decrease the supply of available and willing voluntary donors. Blood is not comparable to other biologicals, because, since it can only be secured from human donors, it cannot be produced for a price depending upon supply and demand. It does not seem to be logical or good policy for any national blood program to depend primarily upon professional donors. The effect would be to depress sharply the motivation for voluntary giving of blood. Dr. Martin's committee will continue to function in order to confer with large organizations representing users of blood and with insurance company officials thus protecting the public against any shortsighted policy.

Future Services

One of the first major undertakings of the council probably will be a nationwide survey of blood-banking institutions and facilities; from these data it will publish a directory, which will include pertinent information about each blood bank. We believe that it is imperative that a thorough survey be made, because the development of any truly national blood program will be dependent upon knowledge of this type. We need to know how much each blood bank can expand its capacity to take care of regional disasters and wartime demands. Also it is important to have such an accurate survey as a guide in developing minimal standards for voluntary accreditation of blood banks. For the first time we hope to establish an authentic record of blood-banking facilities—where they are and the extent and methods of operations. It will undoubtedly form the basis for many programs of interest to national defense and to pharmaceutical and hospital supply industries. By simply focusing national attention on the operation of each blood bank, we hope there will be some self-analysis of local and national procedures, standards, and philosophies. It remains to be seen how throwing the light of public scrutiny on all types of blood banking will of itself tend to eliminate the bad and promote the good. We are asking each member institution and each medical organization in the United States to cooperate in helping us get accurate information. It may be possible as an incidental part of the survey to get information on eye, bone, and other tissue banks. We anticipate the survey will take a year or more.

Even before a major survey gets under way, we are planning a preliminary survey for screening purposes. The American Red Cross has a list of over 9,000 hospitals, blood banks, and other institutions where blood is handled. The American Association of Blood Banks now has in each state a representative who, we understand, could assist the council in screening information about these facilities and who, also, could follow up on any questionnaires that might not be properly returned.

One of the problems we have in developing a questionnaire is the development of proper definitions used in blood banking and blood research. What is a blood bank? At present there are several definitions: one defines a blood bank as a storage place for blood; another defines a blood bank as a hospital facility; and another, as a community service. The council has a project advisory committee working on this problem, and it expects to develop a glossary for the survey. The committee should come up with a definition of a blood bank that describes its function rather than its affiliation to some institution. The definition presently being worked on may not define a blood bank per se, but, instead, it may state that any facility falling into one of three functional categories may be defined as a blood bank. These categories differ basically in the degree of donor procurement, extent of laboratory testing, and volume of distribution. Another problem with which the project advisory committee is concerned is the definition of a "unit" of blood. Is it a pint, 480 cc., 430 cc., or just a bottle of blood? The council is not attempting at this time to set up a list of definitions to be used in blood banking generally. The definitions we are talking about are to be used for the purpose of the survey only.

The council is observing some activities currently going on in the federal government. Recently a committee on blood was formed in the office of the Medical Assistant Secretary of Defense for the purpose of coordinating the blood activities within the armed forces. Each military service has a representative and an alternate. It is expected to function within the armed services in a manner similar to the Joint Blood Council's position in civilian blood banking. The National Research Council, although a nongovernmental agency, has a direct relationship with research within the federal government's framework. Its subcommittee on blood is presently engaged in studying the research having to do with the inactivation of the serum hepatitis virus in plasma and the lengthening of the usable life of blood beyond the present 21-day span. Although the Office of Defense Mobilization subcommittee on blood has been inactive, lately a new office has been established inside ODM, but outside of the National Resources Advisory Committee, to study the resources and procurement methods of medical and hospital supplies for defense. This office is looking into the provision of blood and blood derivatives that might be needed immediately in case of a national catastrophe.

As the blood banking field grows, both in facilities and in personal interest, the furnishing of information about it becomes exceedingly important. Recognizing this, the Joint Blood Council has authorized setting up a bureau of information to coordinate and disseminate such information as I have attempted to give here to all interested blood banks in the United States. There is yet a great deal to be done in blood banking, and a great deal of misunderstanding can be avoided by a centralized, impartial, and unbiased clearinghouse of information. The council is attempting to furnish this service not only to its member

institutions but to the general public as well. The public needs to know more about good blood-banking practices. The council is in a favorable position to assist its member institutions in supplying factual information about this specific medical service, thus providing good public relations for blood banking and research.

Comment

I have mentioned something about the organization and the objectives of the Joint Blood Council, and, although our headquarters is less than a year old and some of our committees are not yet formed, we are beginning to look forward toward the future and see what kind of a program we can coordinate. We are looking forward to the time when there will be a national clearinghouse for blood and blood credits between the various systems. We hope to continue discussions about reciprocity. We are concerned with the level of education of medical personnel and blood bank technicians. We should like to encourage the American Society of Clinical Pathologists and to work with them in elevating these standards of educational requirements. We need to develop and maintain a national publicity program through voluntary donations. In this regard we need to work with the Civil Service Commission in its health and accident insurance program for federal civilian employees and with the Defense Department in its insurance coverage of dependents of military personnel, so that in negotiations with insurance companies blood is not declared a commodity, the cost of which is reimbursable. The council will strive to maintain the decisions of its member institutions that blood banking should be carried out through local programs tailored to meet the needs of each community, with only enough standardizations of techniques and procedures to ensure nationwide effectiveness. Foremost and above all in our thinking and in our motivation is the prime consideration that the sick patient who needs blood gets it quickly, safely, and without exorbitant cost.

We believe sound progress is being made and that our rate of advancement is satisfactory. We are grateful for the active support given to the council by the American Association of Blood Banks and for the splendid spirit of cooperation exhibited by its representatives on the board of directors. This is another example, we are convinced, of how men and women of good will can cooperate for the best interests of the American public. And cooperate, I might say, without a federal law telling them how to cooperate.

221 Fifth St. N.

FEDERAL MEDICAL LEGISLATION
84th Congress

The first session of the 84th Congress convened Jan. 3, 1955. The second session adjourned sine die July 27, 1956. During these two sessions of Congress, 18,939 legislative measures were introduced. All of these were scanned for possible medical significance, and 571 were analyzed and reported by the Washington Office of the American Medical Association. In the 83rd Congress, 407 measures were analyzed and followed by this office, and, in the 82nd Congress, 250 measures were followed. During the 84th Congress, 25 bills were enacted into law. During the 83rd Congress, 24 measures were enacted, and, during the 82nd Congress, 11 bills were enacted.

From the standpoint of the medical profession, congressional activity in health legislation has been very lively. One political party does not have a monopoly on health legislation, as 45% of the congressmen, and 86.5% of the senators, had their names on health legislation in the 84th Congress. The bills followed by the Washington Office of the A. M. A. were generally in the following major groups: (1) social security, 81; (2) veterans, 64; (3) Salk vaccine, 36; (4) tax deductions, 36; (5) military and defense matters, 30; (6) handicapped and vocational rehabilitation, 29; (7) drugs, narcotics, and alcoholism, 28; (8) medical education, 23; (9) aged, 22; and (10) mental health, 21. The total in major groups was 370. The less numerous groups totaled 160 measures, miscellaneous bills numbered 41, and the grand total was 571.

Social Security and Public Assistance

Numerically, the most common measures of interest to physicians were those dealing with social security and public assistance. There were 81 such measures. The most significant of these was an amendment to the Social Security Act (Public Law 880), which provides for cash payments for disability at age 50. This will be financed by an additional one-half of 1% payroll tax to begin Jan. 1, 1957—one-fourth of 1% to be paid by the employee and one-fourth of 1% to be paid by the employer. The self-employed will pay three-eighths of 1% for this feature of the Social Security Act. Other provisions include: the lowering of retirement age of women to age 62; increased federal payments to the states for persons on public assistance rolls and earmarked payments to states for medical care for public assistance recipients; and finally the inclusion of dentists, osteopaths, and lawyers in the social security system.

Increased Limit on Outside Earnings.—The earning limit without forfeiture of social security retirement payments was raised from $900 to $1,200 by Public Law 398.

Vocational Rehabilitation Act Amendment.—Authority was given by Public Law 937 to extend for another year special grants to states for initiating and improving vocational rehabilitation programs.

Military Legislation

Dependents Medical Care.—Public Law 569 established the statutory right of dependents of military personnel to medical treatment at government expense. This is one of several newly inaugurated career incentives to make military life more attractive and will go into effect Dec. 8, 1956. The dependents may be treated in military facilities subject to availability of space and capabilities of staff. Spouses and children of active duty personnel may receive care in nonfederal hospitals but are required to pay the first $25 of such cost or $1.75 a day, whichever is greater. The Secretary

From the Washington Office of the American Medical Association.

of Defense may limit the use of private facilities in areas where military resources are adequate. Other dependents, such as unremarried widows and parents and parents-in-law, are restricted to care in military facilities on a space-available basis.

Doctor Draft Extension.—Public Law 118 extends the doctor-draft act until July 1, 1957. This measure also extends to July 1, 1959, the $100-per-month equalization pay for doctors.

Career Incentive Pay.—To attract and retain physicians in the Army, Navy, and Air Force, Public Law 497 would first give all doctors in uniform, including the commissioned corps of the Public Health Service, an extra $50 a month after more than two years' service, $100 extra after six years, and $150 a month after 10 years and credits medical school and internship training periods toward future pay and promotions. This is in addition to the present $100-per-month equalization pay. Authorization is given for initial commissioning after one year of internship of medical officers and dentists, as captains in the Army or Air Force or lieutenants in the Navy.

Commissioning of Osteopaths.—Public Law 763 for the first time makes osteopaths eligible on a permissive basis for medical commissions in all the military services.

Military Status for Public Health Service.—Under Public Law 492, the President, in times of national emergency, is given authority to give the commissioned corps of the Public Health Service military status.

Appointment of Male Nurses.—Authority was provided in Public Law 294 to appoint male nurses as reserve officers in the armed services.

Public Health

Health Amendments (Omnibus Act) (Public Law 911).—As finally passed, the omnibus heath act compromise measure had five titles, which provided (1) extension for two years beyond next July 1 of the Hill-Burton hospital construction program; (2) authorized grants to states, groups, and individuals for research in mental health; (3) traineeship grants through the Public Health Service for public health personnel; (4) traineeships through the Public Health Service for graduate nurses; and (5) earmarked funds to the states through the Vocational Education Division of the U. S. Office of Education for training practical nurses.

National Health Survey.—Public Law 652 authorizes funds to the Public Health Service for special and continuing surveys of the prevalence and effects of illness and disability and types of medical services furnished.

Mental Health Survey.—In the first session Public Law 182 was passed, which authorized $1,250,000 to finance a broad three-year study of mental health problems and existing programs in the United States. The Joint Commission on Mental Illness and Health was chosen to make this study. Additional grants from private sources are also being used.

World Health Assembly.—Public Law 832 authorizes $400,000 to assist in financing the meeting of the World Health Assembly in the United States in 1958. This will include the observation of the 10th anniversary of the founding of the World Health Organization.

Alaska Mental Health.—Public Law 830 authorizes the construction of facilities and modernization of the Territory of Alaska's mental health program with commitment procedures to be determined by the territorial legislature.

Salk Vaccine Grants.—The first session voted 30 million dollars for grants to states to help finance the vaccination of persons who might not otherwise receive Salk vaccine (Public Law 377). The second session extended this program to July 1, 1957, with an additional appropriation of 23 million dollars (Public Law 411).

Water Pollution Control.—The expiring Water Pollution Control Act was made permanent by Public Law 660. Fifty million dollars a year was authorized for 10 years for matching grants to states and communities to build sewage disposal plants.

Air Pollution Control.—Public Law 159 authorized 25 million dollars over a period of five years for grants to states, private groups, and individuals for research, training, and demonstrations in air pollution.

General Medical Legislation

Medical Care for Dependents of Foreign Service Employees.—Public Law 828 authorizes medical care and full hospital care up to 120 days for the dependents of foreign service employees living abroad. The government will pay the cost except for the first $35 of hospital expenses, which must be paid by the dependent. The government will pay for the health insurance if used for employees or dependents and for transportation to the nearest suitable hospital or clinic. Not all citizen government employees residing abroad are covered by this measure. However, it is hoped to extend the law to make this coverage uniform for all government employees residing abroad if they are citizens of the United States. The military medical facilities will be utilized extensively in this program.

Laboratory Research Construction.—One of the major measures enacted by the 84th Congress was Public Law 835, which authorizes 90 million dollars in grants over a three-year period for medical schools, hospitals, and other nonfederal institutions for laboratory facilities for health and medical research. This will be administered through the U. S. Public Health Service.

National Library of Medicine.—Public Law 941 established a National Library of Medicine, placed for administrative purposes in the Department of Health, Education, and Welfare. To this will be transferred the books and periodicals of the Armed Forces Medical Library, which will cease to exist as such. A 17-man board of regents will select a site and advise on the administration of the Library.

Tax Deductions for Research.—Public Law 1022 permits 10% deduction for income tax purposes for contributions to certain qualified medical research organizations. This is in addition to the standard 20% deduction for charitable contributions.

Donable Property.—The donation of surplus federal property is authorized under Public Law 655 to public and nonprofit institutions and agencies for civil defense work.

Study Committees on Education.—Funds for the President's Committee on Education Beyond the High School and for similar state committees studying this problem are authorized by Public Law 813.

MEDICAL NEWS

ALABAMA

Meeting at Camp Rucker.—A medical meeting will be held at the U. S. Army Hospital mess hall, building no. 8766, Camp Rucker, Ala., Monday evening, Nov. 19, 1956, at which Dr. John D. Martin Jr., Atlanta, Ga., professor of surgery, Emory University Medical School, will discuss "Multiple Intra-Abdominal Injuries." A fellowship hour will be at 6:30 p. m., dinner at 7 p. m., and the program at 8 p. m. The cost of the dinner will be $1.50. Physicians and their guests are cordially invited.

CALIFORNIA

Medical Alumni Homecoming.—Alumni of the University of California School of Medicine, Berkeley–San Francisco, have scheduled a homecoming day, Nov. 23, at the Herbert C. Moffitt Hospital in San Francisco.

Society News.—The Mental Health Foundation, a chapter of the National Association for Mental Health, recently organized in Los Angeles, has absorbed the Southern California Mental Hygiene Society. The directors of the new organization include Drs. E. E. Fitzgerald, Gordon Goodheart, Walter E. Macpherson, James E. McGinnis, John R. Peters, Frank F. Tallman, and Stafford L. Warren.

Conferences in Clinical Endocrinology.—The University of Southern California School of Medicine, postgraduate division, will present "Conferences in Clinical Endocrinology" at the Hotel Statler, Los Angeles, and Los Angeles County Hospital, Nov. 29–Dec. 1. During the morning, lectures on clinical endocrinology will be given; in the afternoon, emphasis will be placed on small group teaching, using patients suffering from endocrine disturbances. The course will end at 11:40 a. m. on Saturday morning so that the visiting physicians may attend the USC vs. Notre Dame football game at the Los Angeles Coliseum. Tuition fee of $67 includes lunch and coffee breaks. For information contact Dr. Phil R. Manning, Director, Postgraduate Division, University of Southern California School of Medicine, 2025 Zonal Ave., Los Angeles 33.

CONNECTICUT

Phi Delta Epsilon Lecture.—The Yale University School of Medicine (New Haven) chapter of the Phi Delta Epsilon fraternity announces presentation of "Tissue Transplantation—Current Studies on the Survival of Skin Homografts" by Dr. Gustave J. Dammin, pathologist-in-chief, Peter Bent Brigham Hospital, Boston, Nov. 28, 8:15 p. m., at the Fitkin Amphitheater. Physicians are invited to attend.

ILLINOIS

Women's Association Honors Dr. Stenhouse.—At the annual convention of the American Medical Women's Association June 7-10 Dr. Evangeline E. Stenhouse, a former president of the association, received the Elizabeth Blackwell annual award, given in memory of the first woman doctor in America. Dr. Stenhouse is attending dermatologist at the Women and Children's Hospital, where she has had a dermatology clinic for 15 years, and consulting dermatologist of Swedish Covenant Hospital. For 11 years she served as dermatological consultant and member of the board of directors of the Cancer Prevention Center of Chicago.

Chicago

Abt-Hess Memorial Lecture.—The Drs. Isaac A. Abt–Julius H. Hess Memorial Lecture, sponsored by the Chicago Medical Society, Chicago Pediatric Society, and the Michael Reese Hospital, Nov. 20, 8 p. m., will be given in the Nurses Auditorium of the hospital. Dr. Morris Fishbein, Chicago, will deliver an address on Drs. Abt and Hess. Dr. Alfred H. Washburn, director, Child Research Council, University of Colorado School of Medicine, Denver, will have as his subject "Watching the Child Become an Adult." All physicians are invited.

Chest Physicians Meet in Chicago.—The Illinois chapter of the American College of Chest Physicians will meet at the St. Clair Hotel, 162 E. Ohio St., Chicago, Nov. 20. Dinner, 6:30 p. m., will be preceded by a fellowship hour, 6 p. m., and followed by the scientific session at 8 p. m. "Hemolox: Topical Hemostatic and Bactericidal Agent" will be presented by Drs. William E. Adams, Raymond Professor of Surgery, and Edwin T. Long, instructor and resident in surgery, University of Chicago School of Medicine. Dr. Earl N. Silber, assistant clinical professor of medicine, Chicago Medical School, will serve as moderator for a panel discussion, "The Management of the Cardiac Patient Undergoing Thoracic Surgery," in which the viewpoint of the thoracic surgeon will be presented by Dr. S. Allen Mackler, that of the cardiologist by Dr. Peter J. Talso, and that of the anesthesiologist by Dr. Reuben C. Balagot, all of Chicago. All physicians are invited to attend.

INDIANA

Personal.—Dr. Loyal W. Combs, Lowell, "the most valuable player" on the 1939, 1940, and 1941 Purdue football teams, has returned to the university as director of the Purdue University student health service. The Lowell Clinic, which Dr. Combs established, will be managed by Dr. David B. Templin, Lowell, his associate, who will be joined by Dr. Reynolds W. Wade of Cincinnati.

LOUISIANA

Dr. Creech Succeeds Dr. Ochsner as Department Head.—Dr. Oscar Creech Jr., formerly associate professor of surgery at Baylor University College of Medicine, Houston, Texas, has been named professor of surgery and chairman of the department of surgery at Tulane University School of Medicine, New Orleans, to succeed Dr. Alton Ochsner, who retired as head of the department on July 1. Dr. Ochsner will remain on the Tulane medical faculty as professor of surgery. Dr. Creech served an internship at Charity Hospital, New Orleans, and completed surgical residency training on the Tulane surgical service at the same institution.

MARYLAND

Dohme Memorial Lectureship.—On Nov. 27-29, George W. Beadle, Ph.D., of the California Institute of Technology, Pasadena, Calif., will present the 19th course of the Charles E. Dohme Memorial Lectureship in the Henry M. Hurd Memorial Hall, Johns Hopkins Hospital, Baltimore. "The Nature of the Gene" will be considered in heredity, function, and evolution.

MINNESOTA

Society News.—Newly elected officers of the Twin City Urologic Society include Dr. Edgar A. Webb, Minneapolis, president, and Dr. George L. Garske, Minneapolis, secretary-treasurer.

Friedman Memorial Lecture.—The first Jack Friedman Memorial Lecture, "The Detection of Minimal Disease by Periodic Roentgen Examination," will be presented in the Mayo Auditorium, Nov. 29, 8:15 p. m., by Dr. Leo G. Rigler, professor and head, department of radiology, University of Minnesota Medical School, Minneapolis. The lectureship, which is to be an annual event, is sponsored by friends and colleagues of the late Dr. Friedman, who died in 1955.

Dr. Brackney Goes to Georgia.—Dr. Edwin L. Brackney, instructor in surgery at the University of Minnesota Medical School, Minneapolis, was recently named assistant professor of surgery at the Medical College of Georgia, Augusta. Since 1949, Dr. Brackney has been pursuing work toward his Ph.D. in surgery at the University of Minnesota Graduate School, Minneapolis. He was a fellow in surgery at the University of Minnesota from 1949 to 1950 and from 1952 to 1955.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

MONTANA

State Medical Election.—Newly elected officers of the Montana Medical Association include Dr. Edward S. Murphy, Missoula, president; Dr. John A. Layne, Great Falls, president-elect; Dr. Herbert T. Caraway, Billings, vice-president; Dr. Theodore R. Vye, Billings, secretary-treasurer; and Dr. Park W. Willis Jr., Hamilton, assistant secretary-treasurer.

NEVADA

General Practice Meeting in Las Vegas.—The annual clinical meeting of the Nevada Academy of General Practice will convene at the Fremont Hotel, Las Vegas, Nov. 24. The program, which will open at 9 a. m., will include "Cancer Detection in the Office of the Generalist" by Dr. John S. De Tar, Milan, Mich., president of the American Academy of General Practice; "Pitfalls in the Diagnosis of Fractures" and "Management of Injuries of the Foot" by Dr. Francis M. McKeever, Los Angeles; and "Making and Interpreting of Intravenous Pyelograms" and "Diagnosis and Treatment of Important Diseases of the External Genitalia" by Dr. Richard P. Middleton, Salt Lake City. Dr. De Tar will also speak at the banquet, 8 p. m., when his subject will be "The Academy—Where Do We Go from Here?" Registration fee will be $5, and admission to the banquet will be $5 a person. Out-of-state registrants are cordially invited.

NEW YORK

Appoint Professor of Psychiatry.—Dr. Thomas Stephen Szasz has accepted the position of professor of psychiatry at State University of New York College of Medicine in Syracuse, effective Aug. 1, 1957, on his discharge from duty with the U. S. Navy, in which he has served since 1954 as psychiatrist in charge of the Enlisted Psychiatric Service, U. S. Naval Hospital, Bethesda, Md. During this time he has been on leave of absence from the department of psychiatry, University of Chicago School of Medicine. A native of Budapest, Hungary, Dr. Szasz became a citizen of the United States in 1944, the year in which he obtained his M.D. degree from the University of Cincinnati College of Medicine. He served an internship at Harvard Medical Service, Boston City Hospital, and his residency at both the Cincinnati General Hospital and the University of Chicago. Since 1951 he has been a staff member of the Institute for Psychoanalysis, Chicago.

New York City

Tumor Clinic Conference.—Dr. Howard C. Taylor Jr., director of the obstetric and gynecologic service, Columbia University College of Physicians and Surgeons, will present "A Combined Surgical and Radiation Program for the Treatment of Cancer of the Cervix" at the tumor clinic conference in the Women's Pavilion, Harlem Hospital, Nov. 21, 10:45 a. m.

Course on Air Pollution.—An intensive course on air pollution, designed for physicians, industrial hygienists, and engineers, will be given by the New York University Post-Graduate Medical School, Nov. 26-Dec. 7. The course will review the basic toxicology of the principal air pollutants, micrometeorologic factors, the effects of air pollution on agriculture and commerce, and methods for sampling and analyzing the various toxic components. Sources of air pollution, including power and steam generation, domestic heating, incineration, internal combustion engines, and the chemical industries, will be described, and methods of control and the pattern of governmental regulations will be studied. Tuition for the course, which is to be given in cooperation with the New York University College of Engineering, is $75. Information may be obtained from the Dean, New York University Post-Graduate Medical School, 550 First Ave., New York 16.

Personal.—Dr. Samuel J. Prigal, associate professor of medicine, New York Medical College, Flower and Fifth Avenue Hospitals, recently presented "Aerosol Therapy" before the Pennsylvania Academy of Physical Medicine and Rehabilitation in Philadelphia.——Dr. H. Houston Merritt, director of neurological service, Presbyterian Hospital, Columbia-Presbyterian Medical Center, discussed "Subarachnoid Hemorrhage" before the members of the hospital staff of the Veterans Administration Hospital at Northport, L. I., May 15.——Dr. Michael S. Bruno, assistant professor of clinical medicine in the New York University Post-Graduate School, has been appointed director of the department of internal medicine of Knickerbocker Hospital, New York City.——On May 21 Dr. Eugen Grabscheid received the Dr. Charles Bramman Meding award. This award, granted annually in memory of Dr. Meding, was bestowed on Dr. Grabscheid "in recognition of his outstanding clinical service at the Harlem Eye and Ear Hospital and for his presentation of programs of study in the interest of the advancement of the art of otolaryngology."—— The Joseph H. Globus Memorial prize, offered annually to members of the staff of the Mount Sinai Hospital up to and including assistant attending level, was recently presented to Dr. Howard L. Moscovitz for his paper entitled, "Generalized Herpes Zoster Initiating a Minor Epidemic of Chicken Pox." The award memorializes Dr. Joseph H. Globus, who founded and for 20 years served as editor of the *Journal of the Mount Sinai Hospital*.——Dr. Jean R. Oliver, emeritus distinguished service professor of pathology, State University of New York College of Medicine, Renal Research Unit, Overlook Hospital, Summit, N. J., has been awarded the second Addis memorial medal of the Los Angeles chapter of the National Nephrosis Foundation for his work on the anatomy of the kidney and for his pioneer ideas in correlating structure and function in that organ.——Dr. Frank E. Stinchfield, professor of clinical orthopedic surgery, Columbia University College of Physicians and Surgeons, has been appointed director of the orthopedic service of the Presbyterian Hospital and executive officer and professor of surgery of the department of orthopedic surgery of the college, succeeding Dr. Alan D. Smith, who becomes consultant in orthopedic surgery to the hospital and professor emeritus of the college.——Dr. Jules T. Freund, chief of the division of applied immunology, Public Health Research Institute of the City of New York, has been appointed a consultant to the National Institute of Allergy and Infectious Diseases, Bethesda, Md.

PENNSYLVANIA

Personal.—Dr. Luther I. Fisher, who retired as head of the medical department of St. Luke's Hospital, Bethlehem, after 21 years of service, was guest of honor at the annual dinner-dance for interns and residents June 21. An inscribed silver bowl was presented to Dr. Fisher.

Fellowships in Medical Science.—Montefiore Hospital, Pittsburgh, announces the availability of three fellowships designated by the donor, Bessie F. Anathan, for studies or research in the medical sciences or in the basic sciences that contribute to the advancement of human health. Applicants will be considered not only on the basis of high scholastic standing but also on aptitude for research. The selection of fellows will not be limited to residents of any area nor with regard to race, color, creed, or religion. Information may be obtained from the Bessie Frank Anathan Fellowship Fund, Montefiore Hospital, Fifth Avenue at Darragh Street, Pittsburgh 13

WISCONSIN

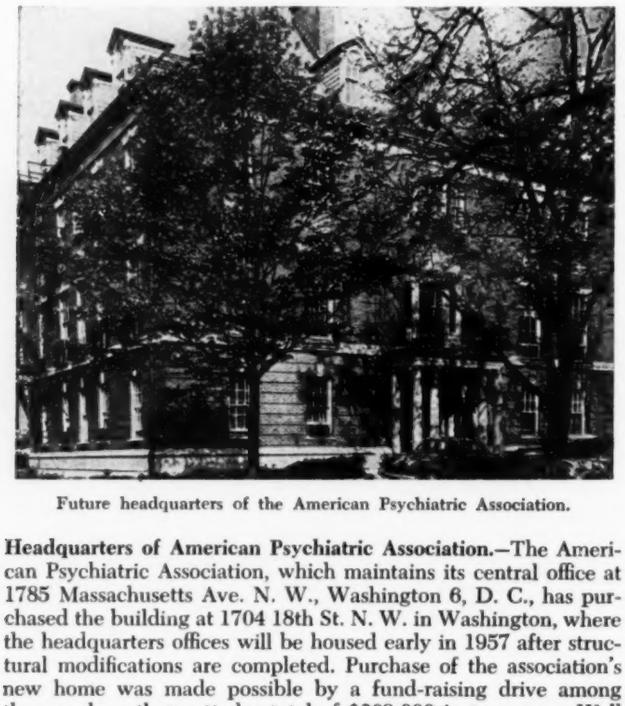
Circuit Teaching Programs.—The council on scientific work of the State Medical Society of Wisconsin (in cooperation with the state board of health, the medical schools of the University of Wisconsin and Marquette, the Wisconsin Academy of General Practice, the Wisconsin Heart Association, Wisconsin Anti-Tuberculosis Association, and the Wisconsin division of the American Cancer Society) has scheduled 12 circuit teaching programs. During November, clinics will be held at the Memorial Hospital, Lancaster, Nov. 27; Mercy Hospital, Janesville, Nov. 28; and St. Elizabeth Hospital, Appleton, Nov. 29. The faculty will consist of Drs. Thomas V. Geppert, Madison, pediatrics; Sture A. M. Johnson, Madison, dermatology; Wilson Weisel, Milwaukee, chest surgery; and an obstetrician (to be selected). The registration fee, which includes a full afternoon and evening of instruction, with dinner, is $6. Participants are requested to attend both sessions, as the meetings will be correlated. Those who attend both sessions will receive credit for Academy of General Practice membership requirements. Requests for reservations should be sent to the Wisconsin State Medical Society, P. O. Box 1109, Madison.

GENERAL

Symposium on Geriatric Medicine.—The American Geriatric Society will give a graduate symposium on geriatric medicine at the Waldorf-Astoria Hotel, New York, Nov. 19-20. All members of the medical profession are invited. There will be no registration fee.

Board of Nutrition Examinations.—The American Board of Nutrition will hold examinations for certification as a specialist in human nutrition in Chicago in April, 1957. Applications may be obtained from and should be forwarded no later than March 1, 1957, to the Secretary, Otto A. Bessey, Ph.D., Environmental Protection Research Division, Quartermaster Research and Development Center, Natick, Mass.

Medical Faculty Awards.—The American Cyanamid Company has announced that Lederle Medical Faculty awards for 1956 totaling $234,853 have been made to 16 medical school teachers and researchers. The awards are intended to help assure schools and universities adequate funds to maintain promising medical men in teaching and research posts. All grants made through the Lederle Medical Faculty Awards Committee are for a term not longer than three years, and no single grant may exceed $10,000 a year. The individual amounts are based largely on specific budgetary and program data submitted by the schools that nominate candidates.



Future headquarters of the American Psychiatric Association.

Headquarters of American Psychiatric Association.—The American Psychiatric Association, which maintains its central office at 1785 Massachusetts Ave. N. W., Washington 6, D. C., has purchased the building at 1704 18th St. N. W. in Washington, where the headquarters offices will be housed early in 1957 after structural modifications are completed. Purchase of the association's new home was made possible by a fund-raising drive among the members that netted a total of $209,000 in two years. Well over half the members contributed nearly $50 each. No contributions were solicited outside the membership. The drive was carried out by a committee under the chairmanship of Dr. William B. Terhune, New Canaan, Conn., with the assistance of the staff personnel.

Directory of Safety Films.—The 1956 National Directory of Safety Films, available at $1 from the National Safety Council, 425 N. Michigan Ave., Chicago, provides information about films on safety, first aid, fire prevention, and civil defense. It describes more than 1,200 films that are available. The directory gives information about the millimeter, running time, color, year of production, and a brief summary of the plot of each film. Among the fields covered are industry, commercial transport, traffic, home, farm, and education. Many of the films are cleared for television and some for theatrical distribution. Each film is available for purchase, rental, loan, or long-term lease from one or more of 292 distributors. The directory includes a separate listing for organizations that limit distribution to specific areas in the United States and Canada.

Chest Physicians Meet in Seattle.—The American College of Chest Physicians will hold its interim session at the Hotel Benjamin Franklin, Seattle, Nov. 25-26, immediately before the A. M. A. Clinical Meeting, Nov. 27-30. The program, which is sponsored by the Pacific Northwest chapter, will include 12 papers preceding a chest disease conference, Sunday, 3:55 p. m. Round-table luncheons (Treatment of Tuberculin Converters; Surgical Treatment of Heart Disease; Early Diagnosis of Pulmonary Emphysema) will be held at 12:15 p. m. A cocktail party, 6 p. m., and dinner will be followed by fireside conferences, scheduled for 8:15 p. m.

Abstracts on Gerontology for International Symposium.—Papers are invited for the fourth congress of the International Association of Gerontology in Merano, Italy, July 14-19, 1957, and the International Symposium on Medical-Social Aspects of Senile Nervous Diseases in Venice, Italy, July 20-21, 1957, which constitute a single, integrated program. Each member of the congress and symposium may present not more than one paper in one of the four official languages: English, German, French, and Italian. Abstracts, typewritten in triplicate, double spaced, with a wide margin, and not exceeding 250 words, must be received not later than Dec. 31, 1956. Correspondence should be sent to Segreteria, Quarto Congresso Internazionale di Gerontologia, Viale Morgagni 85, Florence, Italy.

Blood Research Foundation.—The Blood Research Foundation was established recently in Washington, D. C., to collect and disburse funds and equipment for the support of research in hematology. Because there are many sources of support for such research in the United States, the primary intent of the foundation is to support the research of hematologists in other countries where such support is needed, and where it seems especially warranted. The medical advisory committee of the foundation includes the following physicians: Jeanne C. Bateman, Hill Carter, Major Gen. Albert W. Kenner, Washington, D. C.; Lieut. Col. William H. Crosby; William Dameshek, Boston; Barbara Moulton, Bethesda, Md.; Max M. Strumia, Bryn Mawr, Pa.; and Henry J. Wheelwright, Pittsfield, Mass.

Meeting of Cardiologists.—The fifth interim meeting of the American College of Cardiology will be held at the Webster Hall Hotel, Pittsburgh, Nov. 28-30. After the opening address by the president, Dr. Simon Dack, New York, Dr. George R. Meneely, Nashville, Tenn., will discuss "Physiopathology of Myocardial Infarction." The opening convention lecture, "Emotions, Hypothalamus, and the Cardiovascular System," by Dr. Benjamin Boshes, Chicago, will be at 8 p. m. Wednesday, after an informal dinner. Thursday morning will be devoted to a symposium on myocardial infarction, Thursday afternoon to a symposium on heart disease in industry, and Friday morning to a symposium on surgery of valvular lesions. The following fireside conferences have been scheduled for Friday, 8-10 p. m.: Medical Treatment of Angina Pectoris; Left Heart Catheterization; Congenital Heart Disease in the Adult; Psychosomatic Aspects of Heart Disease; and Recurrent Mitral Stenosis.

Society News.—The **American Academy of Physical Medicine and Rehabilitation** recently elected Dr. Murray B. Ferderber, Pittsburgh, president; Dr. George D. Wilson, Asheville, N. C., president-elect; Dr. Louis B. Newman, Chicago, vice-president; and Dr. Max K. Newman, Detroit, secretary-treasurer.—Newly elected officers of the **Academy of Psychosomatic Medicine** include Dr. Ethan A. Brown, Boston, president; Dr. Lester L. Coleman, New York, vice-president; Dr. Carlos Seguin, Lima, Peru, second vice-president; Dr. William S. Kroger, Chicago, secretary; and Dr. George F. Sutherland, Baltimore, treasurer.—Newly elected officers of the **American Society of Clinical Pathologists** include Dr. John L. Goforth, Dallas, Texas, president; Dr. John W. Budd, Los Angeles, vice-president; Dr. Harry P. Smith, New York, president-elect.

Trudeau Society Offers Fellowships.—The American Trudeau Society, Medical Section, National Tuberculosis Association, 1790 Broadway, New York 19, provides a limited number of fellowships to promote the training of clinicians, medical teachers, and scientific investigators in the field of tuberculosis and respira-

tory diseases. Awards are open to citizens of the United States holding the degree of M.D., Ph.D., or Sc.D. for continuation of graduate study in an approved hospital or medical center. Such studies may be oriented toward teaching or research. Each applicant must have the approval of the head of the department under whom he expects to work. All awards are determined by individual circumstances and are paid directly to the fellow on a quarterly basis. Fellowships are granted for one year. Not more than two renewals will be considered. Fellowship applications must be received by Jan. 1, 1957. Appointments may begin on any date at the convenience of the applicant. A few fellowships at a higher level of training and award are offered to specially qualified candidates with an M.D. degree who have been assured of a continued teaching or research appointment on completion of training. Trudeau fellowships are awarded for one year but may be renewed up to a total period of four years. Details may be obtained from the Director of Medical Education, American Trudeau Society, c/o the Henry Phipps Institute, Seventh and Lombard streets, Philadelphia 47.

Awards in Radiological Research.—On behalf of the James Picker Foundation, the National Academy of Sciences–National Research Council announces the continued availability of funds in support of radiological research. The program is oriented toward, but not necessarily limited to, the diagnostic aspects of radiology. Support is not restricted to citizens of the United States or to laboratories within this country. Funds are available for the following types of award:

1. Grants-in-aid, designed to encourage research offering promise of improvement in radiological methods of diagnosis or treatment of disease.
2. Grants for scholars, a transitional form of support, designed to bridge the gap between the completion of fellowship training and the period when the young scientist has thoroughly demonstrated his competence as an independent investigator. A grant of $6,000 a year will be made directly to the scholar's institution as a contribution toward his support, or his research, or both. Initial grants are limited to one year, but renewal may be recommended. Applications should be submitted by the institution on behalf of the candidate.
3. Fellowships in radiological research, open to candidates seeking to gain research skills leading to investigative careers in the field of radiology. Persons from closely related disciplines are eligible to apply, but candidates whose training has been directly in the field of radiology will receive preference. Candidates must hold the M.D., Ph.D., or Sc.D. degree or the equivalent, and should ordinarily be not more than 35 years of age.

Applications for the fiscal year 1957-1958 must be submitted on or before Dec. 1, 1956. Details may be obtained from the Division of Medical Sciences, Room 310, National Academy of Sciences–National Research Council, 2101 Constitution Ave. N. W., Washington 25, D. C.

LATIN AMERICA

Interamerican Congress of Cardiology.—The fifth Interamerican Congress of Cardiology, sponsored by the Interamerican Society of Cardiology and the Cuban Society of Cardiology, convened at the Rosita de Hornedo Hotel and the Blanquita Hotel in Havana, Cuba, Nov. 11-17. Panel discussions were held on cerebrovascular accidents; present treatment of coronary disease; modern aspects of arrythmias; and treatment of hypertensive heart disease. The following symposiums were scheduled: Atherosclerosis—Etiopathogenesis and Treatment; Chronic Cor Pulmonale; Clinical Electrocardiography and Vectorcardiography; and Present Status of Heart Surgery.

FOREIGN

Name Associate Director of Atomic Bomb Casualty Commission.—Prof. Masanori Nakaidzumi, who recently retired as professor of radiology at Tokyo University after 41 years of association with the university's medical school, has been appointed associate director of the Atomic Bomb Casualty Commission, a field agency in Japan for study of the long-term effects of exposure to the nuclear detonations over Hiroshima and Nagasaki. The commission is operated by the National Academy of Sciences–National Research Council and supported by the U. S. Atomic Energy Commission. Dr. Nakaidzumi is a member of the board of directors of the Atomic Energy Research Institute of Japan, vice-president of the Japan Radioisotope Association, and a specialist member and councillor of the Japan Atomic Energy Commission.

International Abstracts of Biological Sciences.—The Council of Biological and Medical Abstracts has changed the title of its journal, *British Abstracts of Medical Sciences*, to *International Abstracts of Biological Sciences* to accommodate an extension of coverage to a wider range of biological research subjects published in journals throughout the world and inclusion of translations of the important Russian papers abstracted in the *Referativny Zhurnal Biologii* and *Referativny Zhurnal Biologischekoi Khimii*, to be published simultaneously with their appearance in Russian. *International Abstracts of Biological Sciences* is published for the Council of Biological and Medical Abstracts by Pergamon Press, London and New York, on a nonprofit basis. Since the Russian abstracts will have to be translated, the council requires translators with knowledge of anatomy, animal behavior, biochemistry, endocrinology, experimental biology, experimental medicine, microbiology, odontology, pathology, pharmacology, and physiology. Terms of payment and other details may be obtained from the Honorary Editor, Dr. Charles C. N. Vass, c/o Pergamon Press Ltd., 4 & 5, Fitzroy Square, London, W.1, or 122 E. 55th St., New York 22.

EXAMINATIONS AND LICENSURE

AMERICAN BOARD OF ANESTHESIOLOGY: *Part I.* Various locations, July 19. Final date for filing application is Jan. 19. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn.

AMERICAN BOARD OF INTERNAL MEDICINE: *Subspecialties. Cardiovascular Disease.* Chicago, Nov. 30. Final date for filing application was June 1. *Gastroenterology.* Philadelphia, April 5-6. Final date for filing application is March 1.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Examination given twice annually, in the spring and fall. In order to be eligible a candidate must have his application filed at least six months before the examination time. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, St. Louis 10.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* Various cities of the United States, Canada, and military centers outside the Continental United States, Feb. 1. Candidates must submit case reports to the office of the Secretary within thirty days of being notified of their eligibility to Part I. The cases must be prepared in the manner described in the Bulletin of the board with a duplicate index list. *Part II.* Chicago, May 16-25. Request for reexamination in Part II must be received prior to Feb. 1. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6, Ohio.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* St. Louis, Oct. 20-24. *Written.* Jan. 21. Final date for filing application was July 1. *Oral.* New York, May 23-27; Chicago, Oct. 7-11. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, Portland 9, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral. Part II.* Chicago, January 1957. Final date for filing application was Aug. 15. Sec., Dr. Sam W. Banks, 116 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF PEDIATRICS: *Oral. Part II.* New York City, Oct. 12-14, and San Francisco, Dec. 7-9. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Parts I and II.* New York City, June 8-9. Final date for filing application is March 1. Sec., Dr. Earl C. Elkins, 200 First St., S.W., Rochester, Minn.

AMERICAN BOARD OF PLASTIC SURGERY: Miami, Oct. 17-19. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Oral and Written. Public Health.* Philadelphia, Nov. 8-10. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore, Md.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* New York, Dec. 10-11 and New Orleans, Mar. 18-19. Final date for filing application is Sept. 10. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: Tampa, April 1-6. Final date for filing application is Jan. 1. Washington, Sept. 23-28. Final date for filing application was June 1. Sec., Dr. B. R. Kirklin, Kahler Hotel Bldg., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part I.* Various centers throughout the United States and in certain military centers abroad, Oct. 31. *Part II.* Rochester, Minn., Oct. 15-16; New Haven, Nov. 19-20; Kansas City, Kan., Dec. 10-11; Los Angeles, Jan. 14-15; San Francisco, Jan. 17-18; Houston, Feb. 18-19; Nashville, Mar. 11-12; Boston, April 8-9, and New York, June 10-11.

AMERICAN BOARD OF UROLOGY: February 1957. Sec., Dr. William Niles Wishard, 1711 N. Capital Ave., Indianapolis 7.

BOARD OF THORACIC SURGERY: *Written.* Various centers throughout the country, February 1957, and the closing date for registration is Dec. 1, 1956. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Dorland, William Alexander Newman ⊕ Tampa, Fla.; born in Hilton Head, S. C., Dec. 26, 1864; University of Pennsylvania Department of Medicine, Philadelphia, 1886; interned at Old Blockley, now known as the Philadelphia (Pa.) General Hospital; specialist certified by the American Board of Obstetrics and Gynecology; during his period of private practice in Philadelphia, was an instructor in obstetrics at the University of Pennsylvania School of Medicine and associate professor of gynecology at the old Philadelphia Polyclinic; in 1910 moved to Chicago, where he established a private practice and became professor of obstetrics at the Medical Department of Loyola University and professor of gynecology at the Illinois Post-Graduate Medical School; fellow of the College of Physicians of Philadelphia and the American College of Surgeons, of which he was a founder; past-president of the Chicago Gynecological Society; formerly member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association; governor general of the Pennsylvania Society Founders and Patriots of America and founded an Illinois chapter of the society; member of the Sons of the Revolution and the Union League; veteran of World War I; editor of the "American Pocket Medical Dictionary," and author of "The American Illustrated Medical Dictionary," now in its 22nd edition, "Modern Obstetrics," "The Age of Mental Virility," "The Sum of Feminine Achievement," and other books; died in the Veterans Administration Hospital in Bay Pines, Sept. 11, aged 92, of ruptured arteriosclerotic aortic aneurysm.

Manier, John Owsley ⊕ Nashville, Tenn.; born in Nashville, March 18, 1887; University of Pennsylvania School of Medicine, Philadelphia, 1911; professor emeritus of clinical medicine at Vanderbilt University School of Medicine; past-president of the Tennessee State Medical Association, of which he was treasurer for many years; served as secretary and later as president of the Nashville Academy of Medicine and Davidson County Medical Society; fellow, regent, and ex-governor of the American College of Physicians; member of the American Clinical and Climatological Association; specialist certified by the American Board of Internal Medicine; veteran of World War I; member of the staffs of St. Thomas, Mid-State Baptist and Nashville General hospitals and Vanderbilt University Hospital, where he was superintendent from 1914 to 1917; died Sept. 1, aged 69, of coronary sclerosis.

Keschner, Moses ⊕ New York City; Columbia University College of Physicians and Surgeons, New York City, 1899; specialist certified by the American Board of Psychiatry and Neurology; served on the faculty of his alma mater; past-president of the New York Neurological Society; member of the American Neurological Association and the Association for Research in Nervous and Mental Diseases; served as visiting physician to the Department of Correction; associate neurologist to Mount Sinai Hospital; consulting neurologist to Montefiore and Sydenham hospitals and Maimonides Hospital in Brooklyn; died Aug. 31, aged 80, of heart disease.

Baker, William Thomas Henderson ⊕ Pueblo, Colo.; born in Geneseo, Ill., Oct. 4, 1871; Northwestern University Medical School, Chicago, 1896; member of the House of Delegates of the American Medical Association, 1945-1946; fellow of the American College of Surgeons and the International College of Surgeons; past-president of the Pueblo County Medical Society and the Colorado State Medical Society; on the staffs of the Colorado State Hospital, St. Mary Hospital, and the Parkview Episcopal Hospital, of which he was a founder and where he died Aug. 2, aged 84, of bronchopneumonia and metastatic carcinoma.

Inglis, Harry James ⊕ Boston; born in Middletown, Conn., July 2, 1880; Harvard Medical School, Boston, 1904; professor of otolaryngology emeritus at Tufts College Medical School; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; served on the staff of the Brooks Hospital in Brookline; consultant, Boston Dispensary and Malden (Mass.) Hospital; died Aug. 23, aged 76, of coronary occlusion and coronary arteriosclerosis.

Fetzer, Lewis William ⊕ Dallas, Texas; born in New York City Oct. 3, 1878; George Washington University School of Medicine, Washington, D. C., 1910; served on the faculty of Georgetown University in Washington, D. C., Fordham University in New York City, and Baylor University College of Medicine; fellow of the American Association for the Advancement of Science; member of the American Public Health Association; veteran of the Spanish-American War; instructor of the student army training corps during World War I; died Aug. 23, aged 77, of cerebral hemorrhage and arteriosclerosis.

Adler, Frederick Charles, Cleveland, Ohio; Medizinische Fakultät der Universität, Vienna, Austria, 1914; member of the Ohio State Medical Association and the American Psychiatric Association; died July 4, aged 65.

Archer, Benjamin Harrison, New York City; Columbia University College of Physicians and Surgeons, New York City, 1920; member of the Medical Society of the State of New York; died Aug. 29, aged 59, of coronary thrombosis.

Baker, Robert W. ⊕ Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1887; died in Villanova, Pa., Aug. 20, aged 93, of cerebral hemorrhage.

Bennett, John Daniel ⊕ Somerville, Mass.; Tufts College Medical School, Boston, 1925; fellow of the American College of Surgeons; chairman of the board of health; past-president of the Somerville Hospital staff; died Aug. 21, aged 57.

Bernabei, Dominick, Philadelphia; Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia, Italy, 1903; died in the St. Luke's and Children's Medical Center June 30, aged 79.

Bonnell, Ellis, Blue Island, Ill.; University of Illinois College of Medicine, Chicago, 1934; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association; veteran of World War II; died Aug. 22, aged 47, of coronary thrombosis.

Bontrager, Linnie Pearl ⊕ Los Angeles; College of Medical Evangelists, Loma Linda and Los Angeles, 1952; died in Visalia July 9, aged 32, of cancer.

Boone, Charles R., Golden City, Mo.; Northwestern Medical College, St. Joseph, 1893; St. Louis College of Physicians and Surgeons, St. Louis, 1896; died in Lamar July 31, aged 84, of coronary occlusion.

Brosius, Frederic Wanzer ⊕ Troy, Ohio; Starling-Ohio Medical College, Columbus, 1909; past-president of the Butler County Medical Society; formerly practiced in Middletown, where he was a trustee of the Middletown Public Library for many years and on the staff of the Middletown Hospital; died in the Stouder Memorial Hospital Aug. 14, aged 72, of hypertension, arteriosclerosis, and cerebral hemorrhage.

Cagle, Thomas Jackson, Crosbyton, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; served overseas during World War I; died Aug. 22, aged 84, of cancer of the liver.

Casey, William Ross ⊕ Olean, N. Y.; University of Buffalo School of Medicine, Buffalo, 1940; certified by the National Board of Medical Examiners; specialist certified by the American Board of Obstetrics and Gynecology; veteran of World War II; on the staff of St. Francis Hospital and the Olean General Hospital, where he died July 28, aged 43, of coronary thrombosis and arteriosclerosis.

Clack, James Thomas, Wadley, Ala.; Birmingham (Ala.) Medical College, 1911; member of the Medical Association of the State of Alabama; vice-president of the Bank of Wadley; died in Roanoke Aug. 23, aged 80.

Cozby, Harold Otis ⊕ Captain, U. S. Navy, retired, San Diego, Calif.; University of Texas School of Medicine, Galveston, 1924; entered the U. S. Navy in 1925 and retired June 1, 1945; veteran

⊕ Indicates Member of the American Medical Association.

of World War II; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association; fellow of the American College of Physicians; on the staffs of the Mercy and San Diego County General hospitals; died in the U. S. Naval Hospital Aug. 28, aged 54, of coronary thrombosis.

Crawford, James Calvin, Orange, Calif.; University of the South Medical Department, Sewanee, Tenn., 1904; past-president of the Orange County Medical Society; past-president of the Rotary Club; served on the staff of St. Joseph Hospital; died Aug. 15, aged 78, of coronary occlusion.

Crist, John Orville, Chester, Pa.; Medico-Chirurgical College of Philadelphia, 1915; an associate member of the American Medical Association; formerly on the staff of the Taylor Hospital in Ridley Park; died in the Chester (Pa.) Hospital Aug. 26, aged 68, of an intracranial injury.

Cunningham, William Dickson, Columbus, Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, Chicago, 1901; veteran of the Spanish-American War; formerly practiced in Girard, where he was mayor and health officer; died Aug. 27, aged 83.

Damron, Elbert Leroy ✠ Effingham, Ill.; St. Louis College of Physicians and Surgeons, St. Louis, 1907; served as city health officer; on the staff of the St. Anthony Memorial Hospital; died in the Veterans Administration Hospital, Hines, Aug. 5, aged 76, of cancer.

Danzer, Mortimer ✠ Brooklyn, N. Y.; University and Bellevue Hospital Medical College, New York City, 1931; died Sept. 5, aged 52, of coronary thrombosis.

Davenport, Walter Paul ✠ Colonel, U. S. Army, retired, Minneapolis; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, Chicago, 1911; fellow of the American College of Physicians; died July 17, aged 67.

De Donato, Xavier Placidus ✠ Seattle; Barnes Medical College, St. Louis, 1905; member of the American Academy of General Practice; member and past-president of staff, Columbus Hospital; died Aug. 22, aged 73, in an automobile accident near Fort Klamath, Ore.

Dickinson, Francis McLean ✠ San Diego, Calif.; Columbia University College of Physicians and Surgeons, New York City, 1905; member of the Connecticut State Medical Society; died Aug. 16, aged 78.

Dobosz, Paul Joseph, Auburn, Mich.; University of Rochester School of Medicine and Dentistry, Rochester, N. Y., 1954; interned at the University Hospital in Ann Arbor, where he served a residency; killed in an automobile accident Sept. 8, aged 28.

Dreyfuss, Morris ✠ Elmira, N. Y.; Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, 1920; member of the American Academy of General Practice; served with the German Hospital Corps during World War I; died in the Arnot-Ogden Memorial Hospital July 24, aged 62.

Ende, Edward Henry, Central Islip, N. Y.; University of Buffalo School of Medicine, Buffalo, 1908; on the staff of the Central Islip State Hospital; died May 29, aged 74, of cerebral thrombosis, arteriosclerosis, diabetes mellitus, and obstructive jaundice.

Finkelman, Harry ✠ Springfield, Mass.; Middlesex University School of Medicine, Waltham, 1941; veteran of World War II; on the staff of the Springfield Municipal Hospital; died in the New England Baptist Hospital, Boston, Aug. 19, aged 43, of mesenteric thrombosis.

Fisher, Judson Cook ✠ Orlando, Fla.; Columbia University College of Physicians and Surgeons, New York City, 1913; member of the Medical Society of the State of New York; died in the Sunbury (Pa.) Community Hospital Aug. 25, aged 70, of lobar pneumonia.

Gaines, Benjamin Winston ✠ Lieutenant Commander, U. S. Navy, retired, Miami, Fla.; Medical College of Ohio, Cincinnati, 1909; entered the U. S. Navy in September, 1921, and retired Jan. 1, 1943; died in the Veterans Administration Hospital, Coral Gables, July 13, aged 77, of aneurysm of abdominal aorta with hemorrhage and arteriosclerosis.

Goeltz, Herman W., Albuquerque, N. Mex.; University Medical College of Kansas City, Mo., 1898; for many years surgeon in charge of the Atchison, Topeka and Santa Fe Hospital, where he died Aug. 10, aged 79, of cerebral thrombosis and cerebral arteriosclerosis.

Goode, Thomas Vance ✠ Statesville, N. C.; University College of Medicine, Richmond, Va., 1912; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; city councilman; instrumental in organizing the Iredell Memorial Hospital and its first chief of staff; died Aug. 22, aged 67.

Greenwald, Louis ✠ New York City; University and Bellevue Hospital Medical College, New York City, 1911; specialist certified by the American Board of Internal Medicine; associate professor of medicine at New York Medical College, Flower and Fifth Avenue Hospitals; fellow of the American College of Physicians; associated with Beth Israel and Manhattan General hospitals; consultant at Metropolitan Hospital and Bird S. Coler Memorial Hospital and Home; died Aug. 27, aged 67, of coronary occlusion.

Griscom, Lee Eaton ✠ Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1895; on the staff of the West Jersey Hospital, where he died Aug. 17, aged 83, of heart disease.

Guinn, Abraham Jasper ✠ Ducktown, Tenn.; Emory University School of Medicine, Emory University, Ga., 1915; fellow of the American College of Surgeons; died in the Georgia Baptist Hospital, Atlanta, Ga., Aug. 11, aged 66, of cardiac arrest, coronary occlusion, and arteriosclerosis.

Haines, Curtis Alexander ✠ Chicago; College of Medicine and Surgery, Chicago, 1909; on the staff of the Walther Memorial Hospital, where he died Sept. 16, aged 73.

Hamilton, Arthur James ✠ Fenton, Mich.; University of Tennessee College of Medicine, Memphis, 1924; died Aug. 8, aged 58.

Hamilton, William ✠ Highland Park, Mich.; University of Toronto Faculty of Medicine, Toronto, Ontario, Canada, 1914; Detroit College of Medicine and Surgery, Detroit, 1916; on the staff of the Highland Park General Hospital; drowned near Bala, Ontario, Canada, Aug. 2, aged 69, when his canoe capsized while he was fishing.

Hanlon, Frank Robert ✠ Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1925; fellow of the American College of Surgeons; past-president of Lehigh Medical Society; veteran of World War II; president of the staff of the Mercy Hospital; on the staffs of Hazelton State and St. Joseph hospitals in Hazelton; died Aug. 22, aged 55, of acute coronary occlusion.

Hardwick, Everett Vinton ✠ Milton, Mass.; Harvard Medical School, Boston, 1900; veteran of World War I; died Aug. 18, aged 78, of cerebral hemorrhage.

Harrison, James Perry, Cheraw, S. C.; Medical College of South Carolina, Charleston, 1913; died Aug. 22, aged 70.

Haskell, Harris Bigelow ✠ Augusta, Maine; Harvard Medical School, Boston, 1901; died Sept. 6, aged 82.

Hays, Jack D., Indianapolis; Chicago Medical School, Chicago, 1939; veteran of World War II; died in the Veterans Administration Hospital Aug. 2, aged 46, of pneumonia and portal cirrhosis.

Henderson, James Alexander ✠ Quincy, Ill.; George Washington University School of Medicine, Washington, D. C., 1934; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; veteran of World War II; from 1936 to 1942 a ship's surgeon aboard commercial liners; died in the Barnes Hospital, St. Louis, Sept. 2, aged 48, of diabetes mellitus.

Hess, Gaylord Ray ✠ Chicago; Rush Medical College, Chicago, 1918; died in Milwaukee Sept. 2, aged 66.

Hunt, Blair Theodore, Cambridge, Mass.; Howard University College of Medicine, Washington, D. C., 1949; certified by the National Board of Medical Examiners; interned at Freedmen's Hospital in Washington, D. C.; served a residency at the Boston State Hospital in Boston; on the staff of the Boston Psychopathic Hospital in Boston; died Aug. 15, aged 37.

FOREIGN LETTERS

BRAZIL

New Method of Closure of Abdominal Wall.—Dr. A. J. Silveira and co-workers reported in *Revista paulista de medicina* (49:54, 1956) a new method of closure of the abdominal wall, which they have used in 104 operations with good results concerning suppuration and dehiscence. The suture of the fascia is made with a removable nickel-chromium thread, which they were the first to use. The suture of the fascia is made in zigzag, and the thread is put under tension, externally, by means of a metallic extending bar devised by Dr. Silveira. Metallic threads were preferred because sutures of vegetable or animal origin have crevices and gaps in their structure that favor the proliferation of germs, while the metallic threads are uniformly compact. For hemostasis the authors relied on vascular torsion, keeping all bleeders clamped during the operation, and the use of a U-shaped stitch that is removable through the skin. The extending bar and the metallic threads are removed eight days after the operation. Two of the patients in this series had to be operated on sometime after the first operation, at which time a firm aponeurotic scar was found. There were no eventrations in this series, and suppuration developed in only two patients, both of whom had had a cesarean section. In both of them, the poor preoperative condition of the patient could explain the occurrence of suppuration.

Arteriovenous Malformations.—Dr. M. P. Alberniz presented to the Associação paulista de medicina three cases of arteriovenous malformations in the region of the vertebral artery. Cerebral arteriography now permits the neurosurgeon to recognize arteriovenous malformations, which formerly were seen only at autopsy. The first patient had an arteriovenous malformation of the right posterior cerebral artery, and the second had an intrabulbar lesion. In both these patients the blood supply was maintained entirely by the vertebral system. The third patient had a great malformation of the region of the third ventricle, receiving blood from the right and left carotid systems but mainly from the basilar trunk. The first patient refused operation, the second died during the extirpation of the lesion, and in the third the lesion was considered inoperable. In this last patient the fractional pneumoencephalography was of great help in localizing the lesion.

Blastomycotic Tumor of the Femur.—Maffei and Hungria reported, in *Arquivos dos Hospitals da Santa Casa de São Paulo* (2:52, 1956), their findings in a patient with blastomycosis. One unusual finding was the presence of a solitary osseous lesion in the neck of the femur with no symptoms referable to it. Another was the presence of an osseous abscess that was sterile in the common culture mediums. The radiologist described the lesion as localized, destructive, and extra-articular without periosteal reaction or surrounding decalcification. Metastatic carcinoma, syphilitic gumma, osteoarticular tuberculosis, sarcoidosis (Boeck's sarcoid), osseous cyst, giant-cell tumor, plasma-cell (multiple) myeloma, Ewing's sarcoma, and chronic localized osteomyelitis had to be ruled out. The diagnosis was finally made by demonstrating the parasite by direct microscopic examination of the pus and in a biopsy specimen. Blastomycosis may give rise to a localized (hyperergic) or a disseminated (anergic) reaction. The former is an inflammatory process with a granulomatous reaction due to the maximal fixation of antigen by antibody; the latter is a nonspecific necrosis with little or no cellular reaction. The treatment depends on the type of reaction. Sulfonamides are valueless and carry the danger of leukopenia and agranulocytosis, which occurred in the case reported. In localized lesions such as were seen in the authors' patient, complete excision is indicated. The patient was operated on and recovered completely.

Effects of Hysterectomy on Ovarian Function.—Dr. J. Gomes da Silveira and co-workers reported in *Revista de ginecologia e d'obstetricia* (98:515, 1956) that certain changes of vaginal cytology and ovarian structure followed hysterectomy in a group of adult rats. An identical study was made on women in whom vaginal smears were obtained before and after hysterectomy. The preoperative and postoperative rates of urinary elimination of gonadotropins, pregnandiol, and 17-ketosteroids were also compared. In some of these women subjected to a second operation but in whom the ovaries were intact, a biopsy specimen of these organs was taken. Several dogs were also subjected to hysterectomy and the ovaries examined from four to eight months after the operation. The authors' findings were as follows: 1. In adult rats hysterectomy did not cause immediate alterations in the curves of vaginal cytology that could be simply attributed to the absence of the endometrium, but it did determine late changes that corresponded to structural alterations of the ovaries, such as those found in the ovaries of women and dogs on whom hysterectomy had been performed. 2. In women hysterectomy brought about in general the symptoms of hyperfolliculinemia, corresponding to the great changes of the ovaries, but no significant modifications of the rate of urinary elimination of gonadotropins, pregnandiol, and 17-ketosteroids.

INDIA

Busulfan in the Treatment of Leukemia.—J. B. Chatterjea and co-workers (*Bulletin of the Calcutta School of Tropical Medicine*, July, 1956) used busulfan in the treatment of 11 patients with chronic granulocytic leukemia with encouraging results. Depending on the leukocyte count, the dose varied from 4 to 12 mg. daily and was gradually reduced to a maintenance dose of 2 mg. daily or on alternate days. In four patients it was the only drug used, and in two it was given during a relapse after initial treatment with deep x-ray and urethan. In the remaining five patients it was given in smaller dosage at a time when a relapse was imminent after deep x-ray treatment. In the first group, there was satisfactory hematological improvement, with regression of the size of the spleen and improvement in general condition. In the second group, the leukocyte count came down and the general condition improved. In the third group, the drug immediately controlled the proliferative disorder, and the blood findings and clinical condition reverted almost to normal. No toxic symptoms were noted. Busulfan appears to be the drug of choice in the treatment of chronic granulocytic leukemia.

Leprosy.—Fletcher and Shiralkar reported the results of treatment with Avlosulfon in 15 hospitalized patients with leprosy in *Leprosy in India* for April. The drug is given intramuscularly. Of the 15 patients, 12 had the lepromatous form, 2 had a borderline infection, and 1 had the tuberculoid form. All gave strongly

The items in these letters are contributed by regular correspondents in the various foreign countries.

positive skin reactions at the commencement of treatment except the patient with tuberculoid leprosy, whose reaction was only slightly positive. Initially the dose was 50 mg. a week, but it was gradually increased to 200 mg. a week. No side-reactions were observed, except for pain in a few patients. All the patients improved clinically except the one with tuberculoid leprosy. Bacteriologically, 3 became negative, 2 were doubtful, and in the remaining 10 the bacillary count was greatly reduced. There was no deterioration in the hemoglobin level in most of the patients. The results compared favorably with those obtained by others with the same drug. The reduction in the quantity of medicine used, the simplicity of its preparation, the effective control over the dose taken by the patients, the absence of complications, and sureness of action are the chief advantages of the use of this drug.

Gandhi Medical College.—The foundation stone of a Gandhi Medical College building was laid at Bhopal in September by the Home Minister, who said that the establishment of the medical college was a welcome step, as the number of such institutions in the country was inadequate. Even if the present number was increased twentyfold, there would still be a need for more colleges. He hoped that medical facilities would be brought within the reach of every citizen, but he cautioned against opening understaffed and ill-equipped institutions.

World Health Organization Regional Committee.—The regional committee of the World Health Organization for Southeast Asia held its ninth meeting in New Delhi in September. Nearly 200 health projects to be carried out by member governments in 1958 were approved. In addition to delegates from Afghanistan, Burma, Ceylon, India, Indonesia, Nepal, Portugal, Thailand, and the United Kingdom, representatives of the United Nations, International Labor Organization, Food and Agricultural Organization, UNESCO, UNICEF, and the U. N. Technical Assistance Board also attended the meeting. The projects approved by the committee relate to the control of communicable diseases, maternal and child health, environmental sanitation, and training of medical personnel. The committee also formulated recommendations for the development of school health programs and accepted in principle an integrated plan for the eradication of malaria in Southeast Asia by 1961.

IRELAND

Voluntary Health Insurance.—Recommendations have been made to the Minister of Health of Eire for a voluntary health insurance plan for the whole country. Unlike Britain, Eire has no national health service covering all income groups. Free or partly free treatment is available only to the lower-paid workers. An insurance plan to cover the cost of hospital and medical, surgical, and maternity specialist services, but not treatment by general practitioners, is considered possible. Drugs and medicines would also be included if a proportion of the cost were paid by the insured person. Examples of minimum benefit rates are as follows: up to $20 weekly for hospital or clinical maintenance for a maximum of 10 weeks; from $20 for minor operations to $70 for major ones; and from $3 to $9 for anesthetics. Benefits for other services and drugs are also given, with limits for any one year. The annual premium would be $11.20 for an adult and nearly $4 for a child. Increasing the adult premium to $13.30 would make possible a maternity benefit of $56. Tax relief could be claimed on the premiums. The plan will probably be administered by a nonprofit organization backed by the government. Voluntary health insurance exists in Eire, but only on a limited scale and not through the normal commercial insurance companies.

JAPAN

The Japanese Diet.—Although the government announced a large surplus of rice, it cut the quotas in certain categories. For example, whereas a man doing hard labor such as mining coal used to get 600 gm. per day, his allotment has been cut to 400 gm., the same as everybody else, and, whereas there was formerly a slight increase for teenagers and middle-aged persons, they too get 400 gm. a day under the new quota. Japan has to import 6,500,000 tons of rice annually, or more than 25% of her total requirement. Prior to World War II, importations from Korea and Formosa sufficed, but now most of her imported rice comes from the United States. The introduction of wheat flour in the form of noodles and bread to relieve the rice shortage is proceeding rapidly under government sponsorship, though not rapidly enough. Superstitious belief still persists that rice has dietary factors not found in any other grain. Unfortunately, the polished rice eaten in Japan is so deficient in dietary requirements that it is common to find children with pot belly, anemic pallor, and bow legs. Since the children are almost entirely breast fed, the mothers' inadequate diet is reflected in the children. Many people eat no meat. While more fresh milk is being consumed due to the expanding dairy industry, no uniform standard prevails and the fat content of the milk varies widely. A strict government inspection of milk supplies appears to be still some distance away.

Nagasaki and the Atom Bomb.—On Aug. 9, the city of Nagasaki commemorated the 11th anniversary of its atomic explosion. Sixteen nations were represented, including Russia, Red China, and their satellites. There were the usual denunciations of the use of atomic weapons in war. A public announcement was made of the death of a 14-year-old girl, allegedly a victim of the atom bomb when she was 3 years old. At the time of exposure she showed no skin lesion or any other harmful effects save some superficial cuts from broken glass. She was apparently normal in every way until a year ago, when she began to complain of generalized weakness. The cause of her death was officially given as granulocytic leukemia due to exposure to atomic radiation. She was the 12th such victim to be reported this year. Japan still has over 6,000 living victims. The government has appropriated an additional sum of one million dollars to augment the effort to give them proper medical aid.

NORWAY

Carbutamide.—Dr. S. Aarseth reports on the treatment of 16 diabetics with carbutamide (*Tidsskrift for den norske laegeforening*, Sept., 1956). In nine patients the response was satisfactory. The patients who responded best were middle-aged or elderly, particularly those who were obese and whose disease was mild. As the diabetes is often a combination of different types, it may be difficult to anticipate the reaction of a given patient to this drug. It does not replace insulin, nor does it eliminate the need for dietetic measures. It works only if insulin is present in the body. Though disappointments were frequent with young patients, they were not the rule, and in a 13-year-old diabetic girl, complete normalization of the blood sugar level was achieved with the drug. Attempts to readjust by means of carbutamide the blood sugar level of diabetics whose disease is already stabilized by insulin revealed the risk of provoking acidosis and coma. Hence the author recommends confining any such attempt to the hospital. Diabetic acidosis and coma are contraindications to the use of carbutamide, which is ineffective in patients with these conditions. It should also be withheld in the presence of other acute complications of diabetes. Allergic skin reactions and renal insufficiency are also contraindications. Before trying carbutamide the patient should give a weight-reducing diet a fair chance. The treatment of diabetes with carbutamide is still experimental.

Treatment of Thrombosis with Heparin.—A series of 40,000 operations at the Drammen City Hospital was followed by thrombosis or embolism in 280 of the patients. In eight of these death occurred before adequate heparin treatment could be given. The rest were given heparin alone (197 patients) or in combination with some other anticoagulant (75 patients). Reporting on the 197 who were given heparin alone, Dr. I. O. Brennhovd compares their lot with that of the patients who in earlier times received no anticoagulants, were febrile on an average of 20 days, were confined to bed for 35 to 40 days, and showed a mortality close to 20% (*Nordisk medicin*, Sept. 13, 1956). There were only three deaths (1.5%) in this series, the average duration of fever was seven days, and the average confinement to bed was eight days. A daily dose of 250 to 450 mg. was given in four intravenous injections. This treatment was continued until the patient could leave his bed, and in some cases it was continued longer but with smaller doses. The dosage was not controlled by measurements of the rate of coagulation of the blood, and the independence of such control is one of the advantages of treatment with heparin. Brennhovd is no advocate of prolonged treatment with heparin, as its mode of administration is tedious and even difficult if the patient's veins are small. A follow-up examination of 165 of these patients revealed that 84 were symptom-free and another 61 were almost so. Thus only 20 showed signs of troublesome thrombotic sequelae. Heparin therefore is the best available drug in the treatment of the acute phases of thrombosis and embolism. Indeed, the effect of heparin is so specific in patients with these conditions that, if it seems to prove inert after six days, it may be well to question the correctness of the diagnosis.

UNITED KINGDOM

Medical Contacts with Poland.—For the first time since World War II medical contact is now being made with Poland. At the request of the Polish Ministry of Health, the British council has arranged for Sir Robert Macintosh, Nuffield Professor of Anesthetics at the University of Oxford, and Prof. Ian Aird, director of the surgical unit at the Postgraduate Medical School, London, to lecture and teach in Poland as guests of the Polish College of Surgeons. This is the first official visit of this kind for over 17 years. Sir Robert Macintosh will also lecture in Moscow at the invitation of the medical academy of the Soviet Ministry of Health.

Distribution of Physicians.—The British Medical Association has submitted a memorandum to the Ministry of Health containing an estimate on a long-term basis of the number of physicians likely to be required in all branches of the medical profession and the consequent intake of medical students required. The association is opposed to setting an upper limit to the number of entrants into the profession, the size of which should be regulated by supply and demand and not by bureaucratic control. The Minister of Health is interested only in medical recruitment insofar as it affects the number of physicians in the health service. The population of Great Britain has increased from 40,500,000 in 1910 to 50 million at present, and the proportion of elderly people has increased. While the population has increased by 25% since 1910, the number of physicians has risen from 34,000 to 61,000, an increase of 80%. The number of physicians in general practice is 23,100; 8,849 are specialists, 10,057 are in hospitals, and 2,500 are in the public health service. Some of the older physicians may retire in 1958, after having spent a minimum of 10 years in the National Health Service; but many will work on, because their pension will be small and because the value of the compensation promised by the government for loss of former practices when they joined the service will have fallen greatly because of inflation. The B. M. A. thinks that advances in treatment, the possible appearance of new specialties, the emphasis on the prevention and early detection of disease, and the newer concepts of social medicine and occupational health may justify an increased number of physicians. It is impossible to predict the numbers required in 10 years.

The association denies that there is any substantial unemployment among physicians. There may be maldistribution, and, while it is true that appointments in medicine and surgery are not easy to obtain, there is a shortage of anesthetists, psychiatrists, and radiologists. Also, physicians are badly needed in some industrial areas, in the armed forces, and overseas. After World War II the number of general practitioners fell, while the population increased. This was partly because many physicians thought that the financial rewards offered by state medicine were inadequate. An increase in the number of general practitioners in the next few years will be necessary. The association also thinks that more general practitioners should be employed part time in hospitals; at present few are. In the next 10 to 20 years, it is estimated that 13,000 specialists will be needed in full-time and part-time work. The number in the public health service is likely to remain unaltered. The number of general practitioners in purely private practice is estimated at only 600 to 700 in the whole country. This may increase if the government accepts the association's recommendations that private patients should have the right to obtain free medicines, just as do patients coming under the National Health Service. The number of physicians likely to be required in time of war, particularly nuclear war, is unpredictable.

Ratio of Physicians to Patients.—Within recent years the number of physicians has been increasing faster than the number of patients, but the physicians are distributing themselves unevenly, the tendency being for them to settle in London and the south of England, away from the industrial north. Between 1952 and 1955, general practitioners increased by 7%, while the population increased by just under 3%. During this period, "principals" in general practice increased from 17,200 to 18,800, and their assistants decreased from 2,060 to 1,820. Partnerships among principals have increased, partly because of the increase in fees allowed physicians in 1953. Those working in partnerships have increased from 9,740 to 12,070 in three years, with a corresponding fall in the number working independently. The average partnership, however, still has two or three members. It is the younger physicians who are going into partnership. More than half those over age 65 work independently, but 80% of all physicians under 35 work in partnerships. There are 5,323 physicians under 35 in the health service, 3,891 as principals and 1,432 as assistants in general practice. In 1952 there were 2,436 patients per principal general practitioner; this figure fell to 2,283 in 1955. Distribution is improving, although some areas are still short of physicians. In 1952 there were 22 million people in underdoctored areas; today there are only 10 million. Over 25% of the population is in areas with a distribution of 3,000 patients per general practitioner. In many industrial towns the figure is much higher than this. Young physicians are not anxious to settle in such areas.

Drawing the Pharmaceutical Line.—The National Health Service Act states that, if a physician prescribes preparations that, in the opinion of the executive council, are not drugs, it may recover their cost from him. This has caused much controversy over whether certain preparations used in treatment should be considered as drugs or foods. The arguments put forward by the executive councils are often highly pedantic and sometimes irra-

tional. Two preparations that have recently come under scrutiny are Formulac and Casilan. A physician prescribed for two patients with hiatal hernia Formulac, which is a mixture of milk powder, methyl cellulose, aluminum hydroxide, magnesium trisilicate, and ascorbic acid. The executive council decided it was not a drug. The physician therefore appealed to the local medical committee, which upheld the executive council's decision. He then appealed to the referees, justifying the prescribing of Formulac on the grounds that it was antacid, demulcent, and bulk occupying. He held that the nutritive value of the milk powder was incidental. The referees supported the physician, claiming that the food value of the milk powder was small and that the other constituents had a medicinal action. If the physician had prescribed them all separately, they would have been allowed.

Casilan, a concentrated protein preparation, was prescribed by a physician for a patient with cirrhosis of the liver and for one with a protein deficiency who was dying from bronchial carcinoma. The executive council and the local medical committee claimed that it was a food. The referees stated that as used by the first patient Casilan was a food and should not be allowed, although the minority opinion of one of the referees was that it should be allowed as a drug because it had been recommended by a specialist in the hospital, which had, in fact, given it to the patient. It would be anomalous if it were a drug when given by the hospital and a food when prescribed by the general practitioner. The referees allowed Casilan to be prescribed for the patient with carcinoma because he was too ill to eat ordinary food, but by the time the decision was made the patient was dead. The Ministry of Pensions paid for the Casilan.

Nutritional Experiments.—Medical research projects in which convict volunteers collaborate are unknown in the British Commonwealth, so that the proposed use of convicts for nutritional research in South Africa marks a new approach. A working group from the National Nutrition Research Institute of the Council for Scientific and Industrial Research, operating under the direction of the Union Department of Nutrition, is to investigate the effects of variations in dietary fat in two groups of volunteer prisoners, one consisting of 20 Europeans and the other of 20 Bantus, all of whom are serving long sentences. The research, led by Dr. P. J. Kloppers, is part of an investigation on the possible association between fat intake, racial factors, and coronary disease. It is reported to have the sanction of the South African Minister of Justice. No restrictions have been placed on the type of investigation that might be carried out, but the nature and aim of the experiment must be fully explained to the convicts, and all must be volunteers. No prisoner will receive a pardon or remission of sentence, nor will he be penalized if he withdraws from the experiment before it is completed. There are certain indirect incentives, such as a change in diet for some of the convicts and extra tobacco for others. The investigators hope to evaluate the relative importance in the cause of coronary thrombosis of such factors as race, family history, and consumption of unsaturated and saturated fats and refined and unrefined foods. The existing prison diet provides about 18% fat. The consumption of saturated fats will be increased to 40%, while the number of calories in the diet will be kept the same. Then the saturated fat will be replaced by unsaturated fat and changes in blood cholesterol noted.

Exhaust from Diesel Buses.—The increased use of vehicles run on diesel oil results in pollution of the air with 3:4-benzpyrene, which might be a factor in the increased incidence of lung cancer. Commins, Waller, and Lawther have measured the concentration of smoke and 3:4-benzpyrene in the air inside and outside a London bus garage. (*Brit. M. J.* **2**:754, 1956). Samples were obtained by drawing air at a rate of 40 cu. ft. per minute through weighed sheets of fiber-glass filter paper. The amounts of smoke and 3:4-benzpyrene were estimated inside the garage as well as outside while the buses were being started up. Although the concentration of smoke was greatly increased when the bus engines were running in the garage, there was little difference inside and outside of the garage in the concentration of 3:4-benzpyrene. It was therefore concluded that the exhaust smoke of London buses contains little 3:4-benzpyrene. This was attributed to efficient running. All London transport buses derate their engines by 10% to reduce the possibility of heavy smoke emission. Many diesel-powered vehicles, however, discharge great quantities of black smoke and presumably 3:4-benzpyrene.

New National Health Service Regulations.—New regulations governing the medicolegal aspects of the health service have been introduced by the Minister of Health. All physicians are legally responsible for their deputies and paid employees, but special provision has been made to cover cases in which the deputy is a partner and cannot be regarded as being under the control of the other partner. In such cases if a complaint is made against a principal in respect of acts or omissions of the partner acting as deputy, the complaint will be deemed to have been made against both physicians. The case may, however, be dismissed against a principal if there are no prima facie grounds for complaint against him personally and he has carried out his obligation to make all proper and necessary arrangements for a deputy. New regulations also cover complaints against physicians with regard to alleged failure to comply with the terms of service. Formerly this could be done by persons without the support of the patient. Now complaints can be made only by a patient, the patient's spouse, or a person acting on behalf of a patient under 18 or one prevented by age or illness from making a complaint. Complaints can also be made by any person in relation to the death of a patient or by any person to the local executive committee, which will investigate the matter if it thinks fit.

Alimentary Lipemia in Coronary Artery Disease.—Dr. D. N. Barritt has investigated the degree of alimentary lipemia in patients who recently had a myocardial infarction after a coronary attack, which was confirmed by electrocardiography (*Brit. M. J.* **2**:640, 1956). After the administration of a meal of 60 gm. of fat, the extent and duration of the resulting lipemia was measured by optical and chemical methods in 35 such patients four to eight weeks after the infarction and compared with that in 33 healthy men matched for age and 14 healthy premenopausal women. The optical density of serums taken before and three, five, and seven hours after a fatty meal was greater in the patients with coronary disease than in the control patients, although a wide range of values was encountered in both. Results were more significant at five to seven hours after a meal. The serums taken with the patient fasting also showed greater optical density in the patients with coronary disease. Results of chemical estimation showed total lipids in the fasting state to be significantly higher in the patients with coronary disease than in the others, the difference in the mean values being 133 mg. per 100 ml. Total lipids after a fatty meal tended to rise and fall with changes in the visible lipemia. In the female control patients the lipemia was generally less than in the male control patients. It was concluded that in most patients with coronary artery disease the clearing of visible lipemia after a fatty meal is delayed and that failure of the clearing mechanism may persist for many hours. Increased lipemia is known to affect clotting time.

CORRESPONDENCE

PALATINE PETECHIAE

To the Editor:—In the Correspondence section of THE JOURNAL, Sept. 29, 1956, page 517, in a letter regarding palatine petechiae in infectious mononucleosis, Nicholl has challenged the claim of priority to description of this sign by Captain Shiver and associates in the June 16, 1956, issue of THE JOURNAL, page 592. Actually, they stated that this sign was described by Holzel in *Lancet* (2:1054) Nov. 20, 1954. They state that these petechiae were also seen by Muller in 1950 and by Read and Helwig in 1945 but that they were not fully described. Nicholl mentions reports of this sign made in 1953 and 1954, with the latter containing complete descriptions and photographs.

In a recent case at the U. S. Naval Hospital at Charleston, S. C., this sign was particularly well shown, and, in reviewing some of the literature on infectious mononucleosis, I found that this sign was well described by Col. Robert J. Hoagland, M.C., U. S. N., who reported on a series of 56 patients who were West Point cadets (*Am. J. Med.* 13:158, 1952), all having a positive absorbed heterophil titer. He states that, "Although palatal enanthem was noted by me in only 5.4 per cent of the present series, I was impressed, as were Berberich and Thomas at the Naval Academy, before beginning this investigation with an even greater frequency. The enanthem consisted of about five to twenty pinhead sized, red spots which darkened in about forty-eight hours and disappeared after about three or four days."

The article by Berberich and Thomas appeared in the *U. S. Naval Medical Bulletin* (49:271, 1949) and describes 35 cases at the U. S. Naval Hospital, Annapolis, Md., seen from February, 1946, through July, 1947. All of the patients showed positive absorbed heterophil agglutinations. In the article the authors state, "The most interesting development in this series was the number showing buccal mucosa and hard and soft palate petechiae. The writers were unable to find this reported anywhere else except as a minor and infrequent manifestation of the disease. Of the 35 cases, 9 or 25 percent, showed, on admission or during their course, definite crops of petechiae. These were in no way different from the petechiae encountered in other diseases and appeared to be no indication of the severity of the illness, nor to appear, as far as could be determined, at any particular time after the onset of the disease. In the authors' experience these petechiae were so common in infectious mononucleosis that a great deal of diagnostic emphasis was placed on them."

We first saw our patient on the 10th day of illness, and, at that time, he had the palatal petechiae on both hard and soft palates. They did not clear until the 20th day of his illness. We have no way of knowing how early they appeared. This is an interesting sign and Shiver and associates deserve great credit for bringing it to everyone's attention in THE JOURNAL. However, priority must be given to Berberich and Thomas, who first gave a clear description of the sign and its frequency in 1949.

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ADENOVIRUS VACCINE

To the Editor:—A recent paper by Bell, Hantover, Huebner, and Loosli entitled "Efficacy of Trivalent Adenovirus (APC) Vaccine in Naval Recruits" (*J.A.M.A.* 161:1521 [Aug. 18] 1956) has presented preliminary evidence indicating that both a rise in neutralizing antibody and a substantial reduction in the rate of occurrence of adenovirus infections occurred after vaccination with a tissue culture vaccine using types 3, 4, and 7. This program was carried out because evidence of a number of investigations has indicated that adenovirus types 3, 4, and 7 account for a high percentage of acute respiratory disease in military recruits. It is quite possible that this vaccine may be available in the near future through commercial channels to the general practitioner. This letter is to point out that the incidence of adenovirus infections in civilian groups is far lower than that in military recruits. We have recently completed a study of acute respiratory disease in 290 university students and have found that only 2% of cases are due to adenovirus infections. Similarly, Jordan has reported a 2% incidence in over 500 infections occurring in a group of Cleveland families (reported at a conference of the New York Academy of Science, Section of Biology, May 24-25, 1956). In a third study in which complement-fixation tests alone have been employed, Price has studied a large group of civilian patients, students, and nurses in the East at periodic intervals over one or two years and has found that only 4% have shown a rise in titer to the adenovirus group (*Pub. Health Rep.* 71:125, 1956). These studies of sporadic respiratory infections in civilian groups indicate that adenovirus is an uncommon cause. The demonstration of a high incidence in military recruits therefore does not justify the implication that these viruses have similar importance in civilians. This letter does not mean to imply that adenoviruses may not at some time in the future become of some importance to civilians nor that they may not be the cause of occasional outbreaks of respiratory disease. It is important, however, to point out that, on the basis of present evidence, vaccination of a civilian group against adenoviruses is not warranted.

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MUMPS ORCHITIS

To the Editor:—In the Correspondence section of THE JOURNAL (162:425 [Sept. 22] 1956), Dr. A. G. Bower related his experience in the treatment of mumps orchitis, which coincides with our experience at the Philadelphia General Hospital, Northern Division. In search of a more effective treatment for mumps orchitis, in 1954 we started to use steroid therapy in an occasional patient on an investigational basis, with gratifying results. In 1955, all our patients with mumps orchitis were treated with cortisone, 200 to 300 mg., and later prednisone, 20 to 30 mg., orally daily for three to five days. It was found that pain and fever were relieved within 6 to 18 hours and that testicular swelling disappeared within three to four days. To prevent exacerbation of coexistent infection, steroids should be used with caution and whenever possible "covered" with an appropriate antibiotic. Response to steroids has been consistently better than to stilbestrol and is preferred to an operative procedure usually performed too late to prevent "pressure necrosis" of the testis. Since there is a possibility that atrophy may ensue despite the absence of edema, it is most urgent that steroid therapy be instituted at the first sign of orchitis to control edema and inflammation before irreversible changes occur in the testicular tissues.

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LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Charitable Hospitals: Liability for Injuries to Paying Patients.—This was a suit for damages alleged to have been caused by the negligence of the servants of the defendant nonprofit hospital. From an order overruling a demurrer to the defendant's special answer, the plaintiff appealed to the Supreme Court of Ohio.

The plaintiff alleged that the defendant is a corporation engaged in the operation of a hospital; that the plaintiff was admitted to the defendant's hospital, as a paying patient, for surgery; that soon after his admission he was negligently permitted to fall from a hospital bed furnished by the defendant, as a result of which he sustained injuries; and that, while treating the plaintiff for such injuries, the defendant again negligently permitted him to fall out of a hospital bed, whereby the plaintiff sustained further injuries. The defendant, in its answer, admitted it is a corporation engaged in the operation of a hospital and denied that it was negligent in any manner and that the plaintiff was injured in the manner or to the extent alleged. Further answering, and by way of "separate defense," the defendant alleged that it is a corporation not for profit, maintaining and operating a charitable hospital at a loss, the deficit being made up by charitable gifts; that its funds are derived from donations, gifts, bequests, and such income as it may receive from patients who are able to pay; and that there are patients who are not able to pay and are cared for by the defendant as a matter of charity. The plaintiff demurred to the separate defense contained in the answer, "on the ground that on its face it is insufficient in law."

The question raised by the pleadings, said the court, is whether a corporation not for profit, which has as its purpose the maintenance and operation of a hospital, and whose funds and income are derived from private donations, public agencies and paying patients, is immune from liability to a former patient who alleged that he was injured as a result of negligence on the part of the hospital while he was a patient therein.

The law on the immunity, partial immunity, or nonimmunity from liability of organizations not for profit that maintain and operate hospitals, which law has never been what might be described as "settled," has been discussed and ruled on by many courts in the nation with varied and divergent results, the Supreme Court pointed out. It is interesting to note, the court continued, that the Supreme Court of Ohio established a rule of full immunity from liability in 1911, made an exception to this rule in 1922 by recognizing liability against the charitable institution for injury caused by negligent selection of servants by such institution, and, in 1930, made a further exception by recognizing liability against such institution as to strangers, i. e., those not beneficiaries of the charity. It is apparent that, in the final analysis, the partial immunity of nonprofit hospitals obtaining in Ohio at the present time, they being immune from liability only as to patients, i. e., "beneficiaries of the charity" who cannot prove negligent selection of servants, is based solely upon the general ground of public policy. The question before us is thus refined to whether the reasons for this public policy still exist, if they ever did.

The determination of such question, said the court, involves simply the balancing of two "rights." On the one hand there is the well-recognized right of nonprofit hospitals to any benefit and assistance that society and the law can justly allow them, a right that they command by their very nature, and on the other hand we see the right of the individual injured by the negligence of a servant to look for recompense to the master of such servant, under *respondeat superior*. Up to this point in the development of the law, this court has apparently felt that the benefit to society as a whole, gained by granting immunity, caused the former right to outweigh the latter. This was on the ground that such masters were "different from others," and that immunizing them was "a valuable aid in securing the ends of justice." In our opinion this conclusion is no longer justified, and we cannot state our general position on this question more clearly than did Judge Rutledge in a 1942 opinion of the United States Court of Appeals for the District of Columbia, when he said: "The rule of immunity is out of step with the general trend of legislative and judicial policy in distributing losses incurred by individuals through the operation of an enterprise among all who benefit by it rather than in leaving them wholly to be borne by those who sustain them. The rule of immunity itself has given way gradually but steadily through widening, though not too well or consistently reasoned, modifications. . . . The incorporated charity should respond, as do private individuals, business corporations and others, when it does good in the wrong way."

We thus conclude, said the Supreme Court, that a corporation not for profit, which has as its purpose the maintenance and operation of a hospital, is, under the doctrine of *respondeat superior*, liable for the torts of its servants. Accordingly, the judgment of the court of appeals in favor of the defendant hospital overruling the plaintiff's demurrer to the defendant's separate defense was reversed and the case was remanded to the trial court for further proceedings. *Avellone v. St. John's Hospital, 135 N. E. (2d) 410 (Ohio, 1956).*

MEDICAL FILM REVIEWS

Technique of Tonsillectomy and Adenoidectomy: 16 mm., color, silent, showing time 22 minutes. Prepared in 1955 by Linden J. Wallner, M.D., and Lloyd Gittelson, M.D., University of Illinois, Urbana, Ill. Procurable on loan ($2.50) or purchase ($100) from Linden J. Wallner, M.D., 122 S. Michigan Ave., Chicago.

This motion picture demonstrates the technique of tonsillectomy and adenoidectomy in the head-low or so-called upside-down position. General anesthesia is induced by nitrous oxide, Vinethene, and drop ether. Oxygen-ether vapor is used during surgery. The method of intubation and the use of the Barton tongue blade are shown. There is also a demonstration of the McIvor mouth gag with self-retaining tongue blade and suspension from the Killian gallows. The tonsils are removed by dissection and snare. The adenoids are removed by the Shambaugh reverse-curve adenotome and curette. The early postoperative care is also shown. This is a good film demonstrating one method of tonsillectomy and adenoidectomy. The photography is good, and the procedures are clearly seen; however, it would have been well to include the method of putting in packs for postoperative bleeding. The film is recommended for general practitioners, house officers, and medical students.

A Place to Live: 16 mm., black and white, sound, showing time 25 minutes. Presented by the National Social Welfare Assembly through its National Committee on the Aging. Produced in 1955 by Dynamic Films, Inc., New York. Procurable on loan from the Wm. S. Merrell Company, Geriatric Film Library, Cincinnati 15.

This film tells the story of the lives of one family: an adult couple with young children and an elderly father who must be taken into their home. Situations of family upheaval and turmoil are portrayed. With this background, the film goes into what old age can mean to some: loneliness, uselessness, retirement, illness. Then the film describes a possible solution—a home for the aged. The qualities of what an "ideal" home can provide—proper medical care, companionship, and recreation—are presented. In an interview with a social worker concerned with problems of the aged, there is an opportunity to illustrate the different kinds of homes for older people, pointing out the good and bad points that should be looked for when seeking a place for an older member of the family to live. The need for planning, as well as the need for general family understanding of the whole problem of aging, is brought out in the film. This film could be shown to adults who either are planning in terms of their own retirement period or have older people in their families who may need the kinds of services suggested. It would be extremely valuable in classes in sociology and various professional classes at the college level that are concerned with services for the aged. It provides an excellent background for discussion. This picture is also recommended for physicians interested in the subject of geriatrics.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

The Number of Blood Cultures Necessary to Diagnose Most Cases of Bacterial Endocarditis. J. Belli and B. A. Waisbren. Am. J. M. Sc. 232:284-288 (Sept.) 1956 [Philadelphia].

The records of 82 patients with bacteriologically proved bacterial endocarditis who were seen at the Milwaukee County General Hospital between 1938 and 1954 were examined to determine how many blood specimens had to be drawn before a positive blood culture result was obtained. The ages of the patients ranged from 16 to 71; 20 were women and 62 men. The causative organism was Streptococcus viridans in 35 cases, nonhemolytic streptococci in 15, and Micrococcus pyogenes in 28. Other organisms were found in four cases. Three of the patients infected with Str. viridans and eight of those infected with other bacteria had received penicillin prior to the time the first blood was drawn. In 77 of the 82 patients the first positive blood culture was obtained within the first five cultures. Fifty-two of the cases were diagnosed by the first sample drawn. In no cases were more than 10 cultures needed to make the diagnosis. Forty-one per cent of all samples drawn had positive cultures. This study indicates that after five sterile blood cultures the possibility of making a bacteriologically proved diagnosis of subacute bacterial endocarditis decreases. Under these circumstances it is justifiable, therefore, to begin therapy in order to reduce valve damage and other complications of this disease.

Prolonged Use of Arterenol for Shock Following Myocardial Infarction with Patient Survival. I. S. Siglin. A. M. A. Arch. Int. Med. 98:372-376 (Sept.) 1956 [Chicago].

The author describes the case of a 52-year-old woman in whom emotional trauma precipitated a severe myocardial infarction at a time when her status anginosus seemed relatively well controlled. For one week after the infarction the patient presented a gradually progressive shock-like picture. Treatment with 16 mg. of levarterenol (Levophed) bitartrate in 1 liter of 5% dextrose in water by continuous intravenous drip was started when her blood pressure ran between 60/50 and 74/58 mm. Hg for over two hours despite intermittent intramuscular administration of vasopressors such as mephentermine. On the second day of the levarterenol therapy, which was continued for two weeks, severe pulmonary edema with loss of pulses and coma necessitated the use of tourniquets and positive-expiratory-pressure oxygen. The acute left heart failure lasted for six hours. One cubic centimeter of meralluride (Mercuhydrin) sodium was given intramuscularly and daily thereafter because of the pronounced dyspnea, orthopnea, pulmonary rales, and roentgen ray evidence of severe pulmonary congestion with marked cardiac enlargement.

After an initial dose of 100 mg. of cortisone given slowly intravenously on the fourth day of the levarterenol therapy, 25 mg. of cortisone was administered intramuscularly daily for one week. Levarterenol was withdrawn after a total dose of 402 mg. had been given in the course of 14 days. Drug fever apparently resulted from the administration of meralluride for 16 days but subsided after discontinuation of the mercurial therapy. Fever did not recur when mercaptomerin (Thiomerin) sodium was used as a diuretic. Thereafter recovery was slow but steady. After six months, the size of the patient's heart had returned virtually to normal and the lungs were completely cleared. Two years later, the patient led a normal existence, with only a rare anginal attack precipitated by emotional upsets or by walking in cold weather against a strong wind.

The gradually progressive shock-like picture with heart failure was reversed after 14 days of continuous sympathomimetic stimulation with levarterenol along with 7 days of corticosteroid therapy. The difference between failure and success in treating shock rests with early treatment before irreversible changes occur. This requires close observation of the patient and a change from frequent intramuscular injections of vasoconstrictors to continuous intravenous levarterenol drip with its greater ease of pressure control, as soon as it becomes impossible to maintain an adequate blood pressure by intermittent therapy. Since levarterenol apparently does not increase myocardial irritability, it may be that earlier use of this potent vasoconstrictor before frank evidence of vascular collapse sets in might increase the salvage rate in severe hypotension associated with myocardial infarction. Decrease in urinary output may be used as an indicator for strenuous antishock therapy in border-line cases of clinical shock. Constant care to see that the levarterenol solution does not escape from the vein is necessary.

Cortisone and Cortisone-like Substances in the Treatment of Tuberculous Meningitis. I. Santopadre and G. Silanos. Minerva med. 47:468-473 (Aug. 29) 1956 (In Italian) [Turin, Italy].

Fifty-one patients with tuberculous meningitis were treated with cortisone and cortisone-like substances in addition to the classic therapy of alternated cycles of streptomycin and isoniazid. This treatment was given at once or within 10 days to 30 patients; in the other 21 hormones were added to the antibiotics as soon as the condition of the patients made it possible. The hormone was given either orally or by injection in courses of 20 to 25 days each. Beginning doses of cortisone were 100 mg. for adults, 50 mg. for children, and 15 to 20 mg. for sucklings. Beginning doses of prednisone and prednisolone were: 30 mg. for adults, 15 mg. for children, and 10 to 15 mg. for sucklings. The doses were diminished progressively until the suspension of the treatment. The effects of the treatment on the general condition of the patients were very good. Comatose and precomatose forms were favorably influenced. Fever was checked and in some cases the temperature fell to almost critically low values. A high protein level in the spinal fluid and the occurrence of spinal fluid block were noticed. Hydrocortisone administered by spinal injection gave very good results. Paralysis of the cranial nerves was markedly affected. Untoward side-effects were not observed.

Subacute Thyroiditis: Report of Three Cases Treated with Cortisone. A. Moldover. A. M. A. Arch. Int. Med. 98:322-327 (Sept.) 1956 [Chicago].

Subacute thyroiditis is known under several names, such as de Quervain's acute recurrent, pseudotuberculous, and giant-cell thyroiditis. The term subacute thydroiditis, which is the term most frequently used today, distinguishes subacute thyroiditis from the suppurative and nonsuppurative forms, which last only a few days, and the chronic forms, Hashimoto's and Riedel's struma, to which it is not related. The author reports his observations on three patients with subacute thyroiditis and on one patient with carcinoma of the thyroid that closely mimicked thyroiditis. In the first patient, a 41-year-old woman, subacute thyroiditis was at first not recognized. The first symptom was severe pain at the base of the throat radiating to the left side of the neck, head, and ear. At the same time she had a short dry cough. Three weeks later she had temperature rising from 100 F (37.8 C) in the morning to 102 F (38.9 C) in the afternoon. She was treated with penicillin and oxytetracyline (Terramycin), but after two weeks the fever remained unchanged. The thyroid was symmetrically enlarged, firm, and exquisitely tender. She had tachycardia and some enlarged nodes in the axillas. She was hospitalized and was given daily, for 12 days, 150 mg. of propylthiouracil without any effect.

The place of publication of the periodicals appears in brackets preceding each abstract.

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After that, 25 mg. of corticotropin was given for 10 days, and then it was replaced by cortisone. It is not likely that the duration of the disease was shortened by cortisone. However, by the administration of cortisone the patient was kept symptom-free and able to continue her normal activities, whereas without this medication she might well have been invalided during the entire period. The return of symptoms on premature cessation or reduction of the dose of cortisone emphasizes the importance of continuous therapy until signs of the disease (tenderness and enlargement of the gland, elevated sedimentation rate) have disappeared. In the second patient there was immediate response to cortisone. The third patient had creeping or migrating thyroiditis, in which at first only one lobe is involved and later the other lobe becomes enlarged and tender. The disease ran its usual course, but with cortisone the temperature came down to normal and all the symptoms disappeared within a few days instead of weeks or months. Subacute thyroiditis may be confused with carcinoma, but the two conditions can be differentiated by watching the effect of the administration of cortisone for two or three days.

Analysis of Bronchoscopic Report in 185 Cases of Bronchial Carcinoma. A. E. Paletto, E. Masenti and F. Viglione. Minerva med. **47**:342-348 (Aug. 11) 1956 (In Italian) [Turin, Italy].

The authors report bronchoscopic findings in 185 cases of bronchial carcinoma. Bronchoscopic appearances and pathological findings obtained from the removed tissue were compared. Patients were divided into three groups. The first group was characterized by the presence of neoplastic tissue and ulcerations that were directly visible. To the second group belonged patients in whom the bronchial morphology had been markedly altered by the disease. These alterations resulted in stenosis, rigidity, hypomobility, and deformity. To the third group belonged patients whose bronchoscopic findings were negative or in whom manifestations of an inflammatory type were present.

Histological diagnosis based on biopsy was positive in 110 cases (59%), probable in 66 (35%), and negative in 18. Endoscopic examination is quite reliable in indicating whether a patient should be operated on. Comparison of the bronchoscopic and the pathological findings showed that in the patients of the first group the neoplastic infiltration was the same as that detected by bronchoscopy; in the second and third groups the spread of the tumor was much wider than that indicated by bronchoscopy. Early symptoms in relation to the bronchial syndrome of irritation did not indicate any substantial differences between the three groups. The symptoms had lasted longer in patients of the first group than in those of the second and third groups.

Evaluation of Adrenal Cortical Function by Stimulation with Corticotropin (ACTH). N. H. Engbring, R. B. Truitt and W. W. Engstrom. A. M. A. Arch. Int. Med. **98**:257-265 (Sept.) 1956 [Chicago].

Determining the concentration of steroids in urine or blood frequently fails to differentiate patients with adrenal insufficiency from those with intact adrenals. The capacity of the adrenal cortex to respond to stimulation was tested by combining the administration of corticotropin with methods that measure the concentration of adrenal hormone. Administration of from 20 to 25 U. S. P. units of corticotropin in a dextrose solution over a period of from 5 to 10 hours will evoke a maximal response in adrenal cortical function during the period of infusion that will be reflected in the urinary steroid excretion. A single infusion may be sufficient to establish the integrity of the gland, or repeated infusions on three or more successive days may be necessary before an unequivocal rise in urinary steroids is observed. With the introduction of more uniformly potent preparations of repository corticotropin, which can be given intramuscularly and which are capable of causing prolonged adrenal cortical stimulation, a simpler technique became available. The results obtained from testing with these preparations were compared with those obtained with the intravenously administered corticotropin. Corticotropin was given intravenously to 35 patients and the long-acting intramuscular corticotropin to 22 patients. Most of the patients had chronic illnesses. In a few instances the studies were made to exclude a diagnosis of Addison's disease, which had been suspected from clinical or other laboratory evidence; further follow-up disproved the existence of adrenal insufficiency. Some of the tests were made to determine the response in patients with relatively acute or self-limited disorders. Since patients with acute, and especially those with chronic, illnesses are the persons in whom it is most difficult to exclude adrenal cortical insufficiency, and since in these the urinary steroid excretion is frequently depressed, it was felt that control studies should be performed on sick patients rather than on healthy persons. For comparison, similar tests were carried out on four patients with Addison's disease and six patients with anterior pituitary insufficiency.

Either of the two methods induced a significant rise (100% or greater if the control level was above 2 mg. and 200% or greater if the control value was very low, i. e., less than 2 mg.) in either the urinary 17-ketosteroids or the corticosteroids in 54 of 57 patients studied. When an insignificant rise occurred in one urinary fraction, there was usually a significant rise in the other, the corticosteroids being the more sensitive indicator of adrenal activity. The results obtained by the use of intramuscular repository corticotropin were more conclusive than those with intravenous corticotropin given over a period of five or six hours. No doubt much longer or continuous periods of infusion of intravenous corticotropin would have given better results, but the technique is inconvenient. The measurement of the increments in urinary steroids under the influence of corticotropin provides an accurate, safe, and direct test of gross adrenal cortical function. It is likely that tests of this nature will largely replace older tests for chronic adrenal cortical insufficiency, especially in patients with complicating illnesses. In view of the considerable individual variations in steroid output, it was not possible clearly to differentiate patients with known anterior pituitary insufficiency from sick patients with intact adrenal and pituitary function. Therefore, it is not likely that these techniques are sufficiently quantitative to detect "potential" adrenal cortical insufficiency, such as might be present in a person who has received hormone therapy.

Proctosigmoidoscopy in the General Physical Examination: An Analysis of 5,158 Examinations. E. L. Crumpacker, J. P. Baker, H. C. Ballou and others. A. M. A. Arch. Int. Med. **98**:314-321 (Sept.) 1956 [Chicago].

A proctosigmoidoscopic examination is part of the general physical examination of male patients at the Greenbrier Clinic, a diagnostic medical clinic at which approximately two-thirds of the patients are examined under company-sponsored executive health programs. Proctosigmoidoscopy is performed by the internist. Most examinations are carried out in the morning. If the patient has had a morning bowel movement, frequently no further preparation is needed. If feces are encountered, a low enema of sodium biphosphate and sodium phosphate (Phospho-Soda) solution is administered. This results in excellent preparation in nearly all patients. An attempt was made to pass the sigmoidoscope as far as safely possible. Quite frequently it was impeded at 16 to 17 cm. by angulation or spasm of the colon. A total of 5,158 examinations were performed on 2,401 men. Rectal or sigmoidal polyps or both were discovered in 161 patients (6.7% of patients examined, 3.1% of the total examinations). As expected, polyps were most often discovered on the first examination (3.9%), but a high yield was also obtained on the second annual examination. Thereafter, there was an almost constant finding of slightly more than 2% on each subsequent annual examination. In 113 instances the polyps were solitary, but in 48 from two to "many" were observed. They were located from 3 to 25 cm. from the anal margin; only 40 (25%) were less than 10 cm. from the anus; and only four were felt on digital examination of the rectum. Seventeen (10.6%) of the 161 patients gave a history of rectal bleeding.

All patients with polyps were urged to consult a proctologist for removal of the neoplasms. Since many surgeons fulgurate small polyps without biopsy, the authors received pathological reports in only 53 instances; 36 were said to be benign adenomatous polyps; 8 contained invasive carcinoma; 8 others were reported as carcinoma in situ, hyperplastic polyps, or atypical hyperplasia; one was a carcinoid. Three cases of previously unsuspected multiple polyposis of the colon were discovered by the combination of routine proctosigmoidoscopy with follow-up double-contrast barium-enema studies. Carcinoma of the rectum or colon often develops from benign adenomatous polyps. Digital examination and barium-enema studies will demonstrate a small

percentage of rectal polyps, but only proctosigmoidoscopy can be relied upon. One in seven patients with rectal and sigmoidal polyps will have neoplasms at a higher level in the colon. Polyp detection is frequently cancer detection and more frequently cancer prevention. Proctosigmoidoscopy should be a part of every general examination of adults.

Mediterranean Anemia in an Adult Negro. J. E. Norris, H. H. Hanson and R. K. Loeffler. A. M. A. Arch. Int. Med. **98**:356-364 (Sept.) 1956 [Chicago].

The authors describe a case of Mediterranean anemia in a 32-year-old Negro woman. She was completely asymptomatic until the age of 19 years, when splenomegaly was accidentally detected. Subsequently, she was gainfully employed, was not incapacitated, and was first seen at Herrmann Hospital in Houston, Texas, at the age of 32, because of acute biliary colic, jaundice, and menorrhagia. The menorrhagia contributed to her anemia and was relieved by hysterectomy. The subsequent course proved that a stone associated with acute biliary colic was the cause of the jaundice. Mediterranean anemia is not punctuated by hemolytic crises of this degree. Fourteen months after the hysterectomy she was readmitted to the hospital for acute pyelonephritis. Except at the time of these incidental complicating illnesses, the patient was unaffected by her anemia. The diagnosis of Mediterranean anemia was established by physical examination, erythrocyte hemoglobin analysis, and family studies. The patient was in good health, was gainfully employed, and was asymptomatic at a recent follow-up. Splenectomy was decided against, as the red cell survival was normal.

The fact that many persons with Mediterranean anemia lead a relatively asymptomatic normal existence is not well known, nor is it always realized that no race or age is exempt from this disease, although it is rare in Negroes. The consensus regarding the mode of inheritance of Mediterranean anemia is that the severe, fully developed syndrome is inherited as a single dominant gene variably expressed; thus, the homozygous form of the disease manifests itself in the severe classic anemia terminating fatally early in life, and the heterozygous form only in the characteristic changes in the erythrocytes causing no symptoms. Patients with the milder forms of the disease may survive through the fourth and fifth decades. Establishing the exact diagnosis in an adult Negro presents a major cooperative task. A study of the family and hemoglobin analysis are essential. The triad observed in the patient consisted of increased clearance rate, relatively high plasma iron concentration, and poor incorporation in circulating red cells. The same pattern was observed by the authors in five patients with severe Mediterranean anemia and in four patients with pernicious anemia. The fact that Mediterranean anemia is primarily a defect in hemoglobin synthesis and red cell production and not a hemolytic process interrupted by crises is emphasized.

Identification and Significance of Platelet Antibodies. J. L. Tullis. New England J. Med. **255**:541-551 (Sept. 20) 1956 [Boston].

A simple method for the clinical demonstration of antiplatelet antibodies is described. Many cases of purpura, especially idiopathic thrombocytopenic purpura and hypersplenism, are due to the development of immune antiplatelet antibodies. The differentiation of these cases from non-antibody-induced purpura is of considerable clinical significance, chiefly because of new therapeutic agents: adrenocortical hormones and platelet transfusions. Thrombopenia secondary to deficient platelet production, as in metastatic cancer, leukemia, or radiation, generally is not on an antibody basis. Such cases respond best to platelet transfusions. Primary idiopathic thrombocytopenic purpura, hypersplenism, and neonatal purpura, on the other hand, are frequently due to the presence of circulating antiplatelet antibodies. Such cases respond best to splenectomy or adrenocortical hormones or both. The transfusion of platelets, in these cases, could theoretically lead to an aggravation of the underlying disorder. The test consists of a simple mixture of preserved platelets (as antigen), unknown serum (as antibody), and a small amount of human complement. The mixture is incubated at 37 C and studied at 45 and 90 minutes. Normal serum incubated in this manner will cause little or no decrease in platelet count, whereas serum containing platelet antibodies will cause a decrease in count secondary to agglutination or lysis or both. The test serum is treated to remove all components of the coagulation system before addition to the incubation mixture. The antibody titer remains essentially unaffected by this treatment. As a result of this treatment, any subsequent interaction between platelets and serum can be ascribed to antigen-antibody reactions. A normal control serum is tested simultaneously as a standard.

The test requires no elaborate equipment, but scrupulous attention must be paid to the proper preparation of the serum and performance of the platelet counts to give reliable results. Use of this test as a screening procedure in diverse thrombopenic and hemorrhagic disorders revealed that in 57% of all patients with idiopathic thrombopenic purpura, 66% of all patients with hypersplenism, and 60% of all patients with neonatal purpura tested in this series the disease was due to circulating antiplatelet antibodies. Secondary thrombopenic purpura does not give rise to a positive antibody test except in rare cases. The finding of a positive antiplatelet-antibody test result in an undiagnosed case of thrombopenic purpura is strong evidence against the presence of obscure leukemia or metastatic cancer. The serum factor that gives rise to antiplatelet-antibody tests can be shown to be an antibody by immunologic and chemical tests.

A Family Epidemic of Psittacosis with Occurrence of a Fatal Case. R. L. Prouty and W. S. Jordan Jr. A. M. A. Arch. Int. Med. **98**:365-371 (Sept.) 1956 [Chicago].

The authors describe four cases of psittacosis occurring in a family of 12 persons consisting of a 40-year-old Negro minister, his 37-year-old wife, and their 10 children between the ages of 2 and 18 years, who were exposed to two apparently healthy parakeets. This family epidemic of psittacosis resulted in the death of the father and infection of the mother and two children aged 16 and 18 years, with manifestations ranging from severe illness to mild symptoms. Three of the four patients with symptoms had serologic evidence of psittacosis. A diagnostic antibody titer was found in the serum of a fifth member of the family, a 10-year-old boy who had cleaned the bird cage only once. The cage was usually cleaned by his 14-year-old brother, who, despite his more intimate contact with the birds, had neither symptoms nor antibodies. The remaining six members of the family also did not have symptoms or antibodies.

Psittacosis viruses were isolated from the lungs of the patient who died and from one of three parakeets obtained from the store in which the two birds given to the family were purchased. The increasing number of cases of psittacosis in humans calls for a reconsideration of control measures, including education of the public and legislation regulating the importation and sale of psittacine birds.

Causes, Origin and Prevention of Endemic Goiter. H. J. Wespi. München. med. Wchnschr. **98**:1150-1157 (Aug. 31) 1956 (In German) [Munich, Germany].

Of the two types of endemic goiter, i. e., the diffuse and the nodular, the first occurs most frequently in newborn infants, children, and adolescents. While nodular goiter, as a rule, is not reversible, diffuse goiter shows a satisfactory response to the administration of iodine. The author's observations at the gynecologic clinic in Zurich and at the department of obstetrics and gynecology of the Canton Hospital in Aarau, Switzerland, convinced him that it is in newborn infants that normalization of the condition of the thyroid gland by adequate iodine prophylaxis is manifested most rapidly. The supply of iodized salt (with the dose of iodine varying from 5 mg. to 20 mg. of potassium iodide per kilogram of salt) to pregnant women resulted in the reduction of the incidence of goiter in newborn infants from 20.7% (without iodine prophylaxis) to 6.4% (with a dose of 5 mg. of potassium iodide) and to 2.6% (with a dose of 20 mg. of potassium iodide).

An addition of 5 mg. of potassium iodide to each kilogram of salt used not only for cooking purposes but also in bakeries, butcher shops, and for cattle feeding, was introduced gradually in all the cantons of Switzerland between 1922 and 1940, and only in a few of them was the iodine dose increased to 10 mg. of potassium iodide per kilogram of salt on the recommendation of the government. As a result of this general measure endemic goiter practically disappeared, not only in the newborn infants but also in school children and in adolescents. While in the first two decades of the 20th century up to 65 of each 1,000 recruits had been found unfit for active military service, this incidence

was reduced to 39 per 1,000 in 1923; a further decrease occurred continuously to 1 per 1,000 in 1940 and to even less in the following years. In addition to the reduced incidence of endemic goiter, the incidence of its complications, including cretinism and deaf-mutism, was also reduced considerably. The number of deaf-mutes dropped from 12 to 16 among 10,000 children born in 1922 to 4 to 6 among 10,000 children born in the period between 1940 and 1945, and of these deaf-mutes not one was a cretin. Despite the introduction of iodized salt used for cooking purposes as a general measure, the incidence of toxic diffuse goiter or of hyperthyreosis was not increased but rather somewhat reduced in Switzerland. Exogenous iodine deficiency is considered the main factor in the origin of endemic goiter. Consequently, a sufficient supply and uptake of iodine must be secured for its prevention. The addition of iodine to the salt used for cooking purposes in doses that ensure a daily supply of from 100 to 200 gammas of iodine, regulated according to local eating habits, is recommended as a simple, safe, and harmless means for the prevention of goiter in endemic areas.

Hemorrhagic Thrombocythemia: A Blood Coagulation Disorder. T. H. Spaet, S. Bauer, and S. Melamed. A. M. A. Arch. Int. Med. 98:377-383 (Sept.) 1956 [Chicago].

The authors report hemorrhagic thrombocythemia resulting from polycythemia vera in a 71-year-old woman. In the course of five years the patient had repeated episodes of gastrointestinal bleeding and other hemorrhagic manifestations, such as massive, spontaneous epistaxis, many of which were treated with blood transfusions. Two 1,000-r courses of x-ray therapy were given to the gastric area in an attempt to reduce gastric acidity. Once, whole body irradiation, 35 r, was given to depress the blood platelets. For almost two years after this treatment the patient appeared to be relatively free of hemorrhage. Except for this period, the course of the disease was characterized by a persistent elevation of blood leukocytes and generally an increase in platelets reaching 10 million per cubic millimeter. The blood coagulation time, prothrombin, prothrombin consumption, fibrinogen, and clot retraction were all normal. The heparin clotting time was found to be definitely shortened. The patient's platelets displayed anticoagulant activity in the thromboplastin generation test when used at circulating levels but behaved normally when diluted to normal levels. Normal platelets were similarly anticoagulant when concentrated to thrombocytothemic concentrations. It is suggested that the fundamental defect in hemorrhagic thrombocythemia is a coagulation disorder resulting from the anticoagulant effect of excess platelets.

When the patient's platelet count had again risen to about 2 million per cubic millimeter and the hematocrit was up to 58 per 100 cc., she was given 4 mc. of radioactive phosphorus (P^{32}) intravenously. In addition, 500 cc. of blood was removed by venesection. Within a month the platelets had fallen to normal levels, where they had remained to the time of the writing of the paper (four months after the administration of the P^{32}). No further hemorrhagic episodes have occurred.

SURGERY

Bilateral Resection in Pulmonary Tuberculosis. A. Falk and N. K. Jensen. Am. Rev. Tuberc. 74:367-375 (Sept.) 1956 [New York].

Falk and Jensen report observations on 60 patients who underwent bilateral pulmonary resections. These 120 (60 bilateral) resections represent approximately one-fourth of all resections carried out between February, 1951, and July, 1955. The very low operative mortality, freedom from complications, and good clinical results in patients with unilateral resections, who had received preoperative antimicrobial therapy for four months or more, led to consideration of the possibility of bilateral lung resection, particularly for patients with known cavitary disease and persistently infectious sputum. Patients selected for bilateral resection included first, patients whose sputum and gastric washings contained tubercle bacilli, who had persistent cavitation, or who had roentgenographic evidence of instability of the lesions after six months or more of chemotherapy. A second category included those with residual disease, particularly if it was allied with atelectasis, fibrosis, or some other destructive process in the lung. Men who are just beginning their life-work or those established in occupations and with family responsibilities (usually less than 50 years of age) should have the advantage of resection to avoid possible future relapse. Public health risks, and the patient who continues to discharge tubercle bacilli in the sputum, were considered for bilateral resection because it provided these patients with the possibility of returning to their homes or communities without the restrictions or stigma of the "good chronic." Resectional therapy also offered to the patient without a home or family the possibility of living in a domiciliary or other arrangement outside the hospital, with obvious social benefits for the individual and a considerable saving in the cost of hospital care.

All 60 patients were white men ranging in age from 20 to 58 years. Forty-six of the patients were less than 40 years old. There were 31 patients with moderately advanced and 29 with far-advanced disease at the beginning of chemotherapy. Far-advanced disease was more frequent in the group under 40 than in the older age groups. The duration of preoperative chemotherapy varied from 1 to 19 months, with the largest number of patients receiving from 5 to 8 months of therapy. The group receiving more than one year of preoperative chemotherapy consisted, with one exception, of those with far-advanced disease. After surgery chemotherapy was continued for a minimum of six months. Since 1954, the minimum total duration of chemotherapy in the resection series has been 18 months. Judging from the incidence of postoperative complications (28 in 120), bilateral resection carries no unusual or added risks. Only three of the 60 patients continued to discharge tubercle bacilli after the second resection. Two of these patients had a postoperative bronchopleural fistula, which healed slowly. Both were also known to have tubercle bacilli resistant to several antimicrobial agents. The third patient had residual tuberculous bronchitis and saccular bronchiectasis of the remaining lung segments. All three now have had sputum cultures free from tubercle bacilli for six months or more. There were no bacteriological or roentgenographic relapses in any of the remaining 57 patients after the second resection and initial sputum conversion. Bilateral resection offers an additional therapeutic approach in selected cases in which sputum conversion has not been achieved by other methods of therapy.

End-to-Side Bypass Homograft Without Resection in Segmental Arterial Occlusion. H. Laufman, R. Hohf, V. Bernhard and O. Trippel. A. M. A. Arch. Surg. 73:418-431 (Sept.) 1956 [Chicago].

The authors performed 19 bypass procedures upon 17 extremities in 15 patients. The patients ranged in age from 46 to 69, and all but one were men. In each instance the indication for surgery was intermittent claudication or ischemic pain of other types associated with an impalpable pulse distal to the occlusion. One patient had gangrene of the great toe. The occlusion was in the femoral artery in 16 extremities, in the iliac artery in 2, and in the iliac-femoral-popliteal in 1. The pathological process in every case was occlusive arteriosclerotic disease. Arteriography was done by the transaortic route in about one-third of the patients and retrograde through a pulsating femoral artery in two-thirds. The occlusions varied from 2.5 cm. in length to total absence of a lumen from the aortic bifurcation to the popliteal artery. The vast majority occurred in the femoral artery. The distal run-off was estimated as poor in two extremities and fair in three. The remaining extremities appeared to have an adequate distal vascular bed.

The authors applied the bypass technique to short as well as to long arterial occlusions on the premise that anastomoses can thus be made far enough away from the occlusion proximally and distally to assure working with the best possible arterial wall in the host, and with minimal dissection. Furthermore, in an effort to establish the limitations of the procedure, they performed it in certain borderline cases in which the peripheral vascular bed was of questionable patency. The end-to-side bypass lends itself readily to virtually any type of segmental arterial occlusion in the lower extremity. Selection of patients with adequate peripheral run-off appears to be of prime importance, although many with less than adequate distal circulation obtain some benefit. Some of these patients recover a distal pulse but develop postoperative edema of the foot and ankle. Immediate success in restoring distal pulsations was obtained in 15 of 19 by-

pass grafts. Four delayed failures occurred from six days to four months postoperatively, two as the result of delayed occlusion and two as the result of rupture. The circulatory status of the limb subjected to surgery was not worsened in any case, regardless of failure of a graft to function. There were no deaths. In some instances of failure to restore pulse to the ankle vessels, symptomatic improvement was seen nonetheless. Reoperation was carried out in two instances of failure, with one successful result.

Cardiospasm: Results of Heller's Operation. A. Gammelgaard, J. Iversen and G. Thomsen. Acta chir. scandinav. 111:98-107 (No. 2) 1956 (In English) [Stockholm, Sweden].

Twenty men and 14 women with cardiospasm underwent extramucosal myoesophagocardiotomy (Heller's operation) (35 operations) at the department of thoracic surgery of Rigshospitalet in Copenhagen, Denmark. The approach was by left thoracotomy in 32, by right thoracotomy in one, thoracoabdominal in one, and abdominal in one. There were no operative or postoperative complications except for an operative injury of the gastric mucosa sustained by one patient in the course of myotomy and repaired by suture. Thirty-one patients were followed up for an average of three and a half years. Fifteen patients (49%) obtained excellent results with no complaints, 11 patients (35%) had satisfactory results with only occasional retrosternal oppression on swallowing, and 5 patients (16%) had poor results with recurrence of dysphagia, retrosternal oppression, and rumination. Comparison of preoperative and postoperative roentgenograms revealed improvement in 24 patients, i. e., a gradual decrease in the degree of dilatation and a more rapid emptying through the cardia to the stomach. No regurgitation was observed. The poor results could be ascribed to concomitant disorders such as hiatal hernia, neurinoma in the stomach, epiphrenic hernia, and segmental eosophageal spasm, or to technical faults. Heller s operation performed through a left-sided thoracotomy is a satisfactory solution of the surgical problem in cardiospasm, affording clinical improvement in practically all patients. An epiphrenic diverticulum developed during the myotomy in two patients, but it caused symptoms only in one.

Subtotal Gastrectomy for Peptic Ulcer: A Comprehensive Review of Two Hundred Thirty-Six Cases with Emphasis on the Treatment of the Ulcer Which Causes Obstruction. W. S. Caudell, C. Marshall Lee Jr. and C. A. Liebig. A. M. A. Arch. Surg. 73:469-480 (Sept.) 1956 [Chicago].

Caudell and associates present an analysis of 236 patients subjected to a subtotal gastrectomy for peptic ulcer during the five-year period from June, 1949, to June, 1954. A major objective of this analysis was to determine whether it is possible to anticipate technical difficulty before the intervention. It was found that technical difficulties could be correlated with the clinical findings. They were encountered in nearly 70% of the patients with duodenal obstruction or about twice as frequently as in any other group. The duodenal lumen was entered either intentionally or accidentally in 42% of the patients with duodenal obstruction or about four times as often as in patients with duodenal pain. The presence of significant obstruction in peptic ulcer should forewarn the surgeon of a difficult operative procedure and permit him to prepare for it.

The authors strongly endorse the medical management of peptic ulcer in suitable cases. The "conservative" method, however, was often unduly prolonged, to the serious disadvantage of the patient. If failures of medical management were recognized earlier and accepted as such, with a prompt decision in favor of surgical intervention, the incidence of technically difficult, high-risk cases could be substantially reduced. Special attention is given to the importance of adapting the surgical procedure to the needs of the individual patient. The fact that a patient has been scheduled for a subtotal gastrectomy does not necessarily mean that a portion of his stomach must be removed. Some surgeons consider a scheduled gastric resection as a sort of personal challenge to be completed at any cost, and this probably contributes more than any other single factor to the complications of elective gastric surgery. Although methods of dissecting and closing the duodenal stump are as numerous as the techniques for reanastomosis of the gastrointestinal tract, no single procedure has proved satisfactory in all cases. Suggestions are offered to increase the safety of operations.

The Surgical Complications of Meckel's Diverticulum in Infants and Children: An Analysis of Sixty Cases. C. D. Benson and L. M. Linkner. A. M. A. Arch. Surg. 73:393-398 (Sept.) 1956 [Chicago].

Meckel's diverticulum or remnant of the vitelline duct may cause serious surgical complications in the pediatric age group. The authors reviewed the records of 60 children with such complications, ranging in age from 1 day to 14 years. Nearly one-third of the children were less than one year old, and 75% were under 5 years. The complications observed in this group, in the order of their frequency, were intestinal hemorrhage, abdominal pain, acute intestinal obstruction, umbilical fistula, and perforation with peritonitis. The parenteral administration of fluid and blood is essential to insure a high survival rate, particularly in the newborn and in infants. It is essential to restore the blood volume to near normal levels before attempting surgical treatment in patients in whom moderate to severe hemorrhage is the presenting symptom. The authors adhered to this principle in the 24 patients who had intestinal hemorrhage, and all of them survived.

Mechanical obstruction and intestinal hemorrhage are the most frequent surgical complications of Meckel's diverticulum in the first two years of life. With increasing age, intestinal hemorrhage and obstruction become less frequent but acute inflammation of the diverticulum occurs more often. There were four deaths, or a mortality rate of 6.7%, in the 60 infants and children operated on. All of the four patients who died had acute intestinal obstruction and a gangrenous intestine. Fifteen of the 18 patients who required intestinal resection and anastomosis survived.

Tuberculous Tenosynovitis of the Hand Treated by Combined Surgery and Chemotherapy. M. Felländer. Acta chir. scandinav. 111:142-150 (No. 2) 1956 (In English) [Stockholm, Sweden].

Eight men and 11 women between the ages of 19 and 70 years with tuberculous tenosynovitis of the hand were treated with complete surgical removal of the diseased tendon sheath combined with systemic and local chemotherapy. After excision of the synovial sheath and effective hemostasis, 1 gm. of streptomycin was applied locally. One gram of streptomycin was given intramuscularly once daily for from three to six weeks, or for longer periods in complicated cases. Ten to 14 gm. of aminosalicylic acid (PAS) and 0.3 to 0.4 gm. of isoniazid were given orally daily for the entire period of treatment. Relapses occurred in six patients, but complete recovery resulted from chemotherapy alone in one of these and from reoperation in five. Fourteen of the 19 patients were followed up for from three and one-half to five and one-half years after the first operation. In six of these patients the tenosynovitis involved the volar sheaths at the wrist, in three those on the fingers, and in five the dorsal sheaths at the wrist. No recurrences of the tenosynovitis were observed at follow-up. In one patient a tuberculous synovitis of the wrist developed two years after the operation. In all the other patients the recovery was complete, with a good functional result. The results obtained with combined surgery and chemotherapy were much better than those obtained by the author with both surgical and conservative treatment, and they were distinctly better than those reported in the literature before the advent of chemotherapy. It is advisable to begin treatment with combined chemotherapy for a short period and to observe the patient's response. If there is no response, it is advisable not to wait too long before operating. Otherwise there is danger that the tenosynovitis will spread to the adjacent joint and bone and that destruction of the tendons will occur.

Argentaffin Carcinomas: Report of Twenty-Nine Cases, Six Malignant. W. J. Eldred. A. M. A. Arch. Surg. 73:517-525 (Sept.) 1956 [Chicago].

Twenty-nine argentaffin carcinomas were collected from the postmortem records and surgical pathology files of San Francisco Hospital (University of California Service) and Franklin Hospital in San Francisco, representing the 23-year period from 1932 to 1954. Of these 29 cases, 24 are analyzed. Seventeen patients were treated surgically, and the tumors of the other 12 were found at autopsy. The author regards the term "carcinoid" tumor as undesirable and prefers the term argentaffin carcinoma. Ten of the 29 tumors were appendiceal tumors. Most authors report a higher incidence of these tumors in the appendix than

elsewhere. The rest of the tumors were distributed in the gastrointestinal tract as follows: ileum, 9 cases; small intestine (unspecified), 3; rectum, 3; jejunum, 2; duodenum, 1; and cecum, 1. The appendiceal argentaffinoma is frequently found in an appendix removed for inflammation. Three of the present series of ten appendices were inflamed. Appendiceal argentaffin carcinomas have a good prognosis because the tumor is often obstructing and gives rise to symptoms. Thus, early surgery results in removal of the tumor and there is less likelihood of its having progressed to the stage of serosal and lymph node spread than is the case with an identical tumor situated elsewhere in the gastrointestinal tract.

Appendectomy with wide excision of the mesoappendix is the treatment recommended when an argentaffin tumor is found in the appendix. Intermittent obstruction of the small intestine or x-ray demonstration of a filling defect or kinking of the terminal ileum in a middle-aged patient should alert one to the diagnosis of argentaffin carcinoma. Another feature that may prove of diagnostic importance is the association of these tumors with valvular disease of the right side of the heart, sudden flushing of the skin, an unusual type of patchily distributed changing cyanosis, and "asthma." The cause of the syndrome is thought to be substances with vasoactive properties. Serotonin, or enteramine (5-hydroxytryptamine), is most likely to correspond with the signs and symptoms of the syndrome. Recently, it was extracted in considerable amounts from an argentaffinoma. Recognition of the vasomotor symptoms should result in more cases of argentaffin carcinoma being discovered and brought to operation. The radical surgical extirpation of such tumors is often followed by a relatively long and comfortable life for the patient. Removing the primary tumor in patients with extensive metastases often results in arrest of further metastases for several years.

Critically Crushed Chests: A New Method of Treatment with Continuous Mechanical Hyperventilation to Produce Alkalotic Apnea and Internal Pneumatic Stabilization. E. E. Avery, E. T. Mörch and D. W. Benson. J. Thoracic Surg. **32**:291-311 (Sept.) 1956 [St. Louis].

Approximately 25% of deaths from traffic accidents are due to chest injuries. A number of patients with severe chest injuries who were rapidly failing with the usual modern means of treatment were quickly stabilized and eventually recovered by the use of continuous mechanical hyperventilation. The first patient treated by this method was a 51-year-old man who had been slowly rolled into an 8-in. space between a diesel locomotive and a steel furnace. He was admitted moribund, in deep shock, with multiple bilateral fractures of ribs; costochondral separations; bilateral tension hemopneumothorax; fractures of the sternum, clavicles, and pelvis; crushing injuries of the liver and genitourinary tract; paralytic ileus; and acute gastric dilatation. Bilateral intrapleural catheter water-trap drainage was carried out along with tracheotomy. The anterolateral chest wall was partially stabilized with soft tissue traction. Long metal pins were passed under the pectoralis and serratus anterior muscles on each side. Spreader bows were attached and traction applied to an overhead frame. Although the paradoxical motion was partially corrected, respiratory acidosis continued because of inadequate ventilation resulting from actual lung destruction and pulmonary edema. Various demand-flow and pressure-cycled respirators were tried, but these machines did not ventilate the patient adequately. The piston-type intermittent-positive-pressure respirator developed by Mörch was then applied, and the patient's condition improved from a semicomatose state of respiratory acidosis to a more alert state of alkalotic apnea. The pH was kept in a range of approximately 7.45. Lung inflation and deflation were mechanically maintained rhythmically and smoothly, with loss of all paradoxical motion. This stopped all overriding and grinding motions of the broken rib ends and promoted their healing. Soft tissue traction was discontinued as soon as it was realized that stabilization of the chest was to be obtained with mechanical ventilation. This was maintained for 30 days until the patient was able to breathe adequately without the assistance of the machine. The patient was discharged from the hospital 51 days after the injury and has returned to his work. The authors used the same principles of management in a number of other severe chest and combined head and chest injuries with equally good results.

The most striking benefit of this mechanical hyperventilation treatment is that it is safe and allows the survival of patients with a seemingly hopeless prognosis. Its chief advantages are correction of paradoxical motion of the chest wall; removal of hypoxia and hypercarbia; absence of pulmonary edema; less sedation is required; no serious deviations in blood chemistry with prolonged mild respiratory alkalosis; no measurable circulatory defects; prompt return of blood chemistry and physiological responses to normal with cessation of hyperventilation; and no late ill-effects. Continuous mechanical ventilation should be applied whenever the function of the chest wall has been impaired, as in crushing injuries of the chest; infections (poliomyelitis, tetanus); muscle disease (myasthenia gravis); trauma to the brain (head injuries, postoperative neurosurgical conditions, cerebral vascular accidents); respiratory depression (industrial poisons, suicide, overdosage of medicaments and anesthetics); and in ventilatory insufficiency following pulmonary resection. Many of these patients now die not of their primary lesions but from complications arising from decreased pulmonary ventilation.

Congenital Atresia of Esophagus. G. H. Humphreys, B. M. Hogg and J. Ferrer. J. Thoracic Surg. **32**:332-346 (Sept.) 1956 [St. Louis].

This report deals with 136 cases of congenital esophageal atresia with and without fistula in infants seen at Babies Hospital or born in Sloane Hospital, both now units in the Columbia-Presbyterian Medical Center in New York, in the half century between 1903 and 1953. Over the last decade successful surgical treatment has been possible, and since then larger numbers of infants with this anomaly have been observed. The defect is not so infrequent as the earlier experience suggested; either it was unrecognized or little effort was made to treat it in the earlier period because of the apparent hopelessness of the situation. It is probable that the incidence, about 1 in 3,000 births, has not changed. The type of anomaly in this series was about the same as that described by others; in 122 of the 136 patients the esophagus ended in a blind pouch high in the posterior mediastinum and the lower segment originated in a fistula from the membranous portion of the trachea, the carina, or one of the primary bronchi. All but two of the recoveries occurred in this group. It seems probable that an incomplete cleavage between trachea and esophagus, together with failure of recanalization of the esophagus, will explain all the types of the anomaly. Of the total group of 136 patients, 75 are known to have had other congenital malformations. Among the 104 who died, 93 were examined at autopsy and 61 of these showed other anomalies; of the remaining 11 in whom autopsy was not performed, 5 showed gross associated anomalies. Thus, two-thirds of the infants who died were handicapped by other malformations. In contrast, among the 33 survivors only 9, or fewer than one-third, showed other anomalies.

Of the 101 patients operated on, 32 survived and 29 of these were living and well at the time of this study. Factors influencing survival are the size and degree of prematurity of the infant; the association with other severe malformations; the awareness of doctors and nurses caring for newborn infants of the possibility of the condition and their alertness in recognizing the characteristic symptoms; the promptness with which patients are referred for surgery; the care in preoperative and postoperative management; and the technical aspects of the operation itself. The first two factors are uncontrollable. The others give room for improvement. While occasional patients present anomalies that require multiple-stage procedures before swallowing can be restored, in the majority, successful end-to-end anastomosis of the esophagus is possible, with satisfactory restoration of normal swallowing.

Congenital Diaphragmatic Hernia and Hypoplastic Lung: A Clinical Evaluation. B. B. Roe and H. B. Stephens. J. Thoracic Surg. **32**:279-290 (Sept.) 1956 [St. Louis].

A number of reports on congenital diaphragmatic hernia indicate that the condition can be surgically corrected with a low mortality rate, but the authors observed that the compressed and hypoplastic lung in the previously occupied pleural space could not be expanded after removal of the abdominal organs. They studied the hospital records and autopsy protocols of all cases of congenital diaphragmatic hernia in 11 San Francisco hospitals for as long as records were cataloged, up to 20 years. In all, 47

cases were analyzed for pregnancy factors, obstetric course, birth weight, presenting signs, time of operation, operative findings, length of survival, and autopsy observations. They found that the mortality rate in the newborn group was 87% as compared to 12% in the older patients (over 14 days of age), suggesting that natural selection plays an important role in the results. Surgical mortality was 67% in the newborn infants and 8% in the older group. Hypoplastic lung was an associated finding in nearly all patients that came to autopsy. Average combined lung weight was 44% of normal. The lung was found to be undeveloped on the side of the hernia in 10 of the infants who received surgical treatment and in 17 of those who came to autopsy (weight ratios of 0.13 to 0.91).

It is possible that clinical inexperience, technical difficulties, and other hazards of operating on the newborn infant are responsible for the high mortality rate. Surgical results are distinctly better despite these same disadvantages after two weeks of life and better respiratory compensation. The process of natural selection in the early neonatal period removes the patients with inadequate respiratory capacity. This period is also of positive value in improving the gradually acquired ventilatory capacity of an infant and rendering him a better surgical risk after a few days despite the hernial contents in the chest. Proponents of early surgical intervention argue that no harm is done by an unsuccessful attempt to help those whose unpredictable fate has already been sealed. They hope to salvage the borderline patient who might have an expansible lung and survive if the mechanical pressure were removed but who would not otherwise survive. The authors believe that more patients with marginal respiratory capacity at birth will survive if surgical intervention is delayed 10 days than if it is carried out immediately. Those with inadequate capacity will die whether they are operated on or not.

Hypophysectomy in the Treatment of Advanced Cancer of Breast. B. S. Ray and O. H. Pearson. Ann. Surg. **144**:394-406 (Sept.) 1956 [Philadelphia].

Ray and Pearson discuss the benefits of hypophysectomy in the management of advanced mammary carcinoma in women. In the 22-month period between March, 1954, and December, 1955, 75 operations were performed on 74 women. Evaluation of the results is based on a follow-up of from 3 to 24 months. The operation employs a coronal scalp incision behind the hairline; opening of the right frontal bone; elevation of the right frontal cerebral lobe; division of the right olfactory nerve; division of the hypophysial stalk; enlargement of the opening in the diaphragm sellae; removal of the pituitary gland by curettement and suction followed by exposure of the sella turcica to Zenker's fluid; and closure of the wound without decompression.

There were seven deaths in the first 30 days after the operation, though only three could be attributed directly to the operation. Of the 67 patients who survived the operation, 36 had objective remission of their disease and 31 were not benefited. New remissions can be obtained by hypophysectomy in patients who derived temporary benefit from castration or from a combination of castration and adrenalectomy. Every patient who was temporarily benefited by castration obtained a new remission after hypophysectomy, and 4 of 11 patients who had had both castration and adrenalectomy obtained a new remission after hypophysectomy. It is suggested that if hypophysectomy is not employed as the initial ablative operation in altering endocrine influence on the disease, it is probably preferable to adrenalectomy as a second operation after castration. The survival period is more than twice as long in patients who obtain a remission after hypophysectomy as it is in those who do not, and the difference should be even greater when more time has elapsed.

Breast Cancer and Pregnancy: Report of 49 Cases Followed 5 Years. T. T. White and W. C. White. Ann. Surg. **144**:384-393 (Sept.) 1956 [Philadelphia].

The authors collected 49 cases in which mammary cancer was associated with pregnancy from six hospitals in Seattle and from three hospitals in New York City. Of 11 patients treated for cancer of the breast while they were pregnant, 4 had lesions limited to the breast. Two of these four women died within a year, whereas two survived for 14 years, one still being free from cancer after this interval and the other dying from cancer in the opposite breast. All of the seven women who had involvement of the axillary lymph nodes died within four years. In 14 patients, the tumor was first noted during pregnancy and treatment was deferred until the nursing period. The average delay in treatment was 11 months. There were 3 such patients with disease localized to the breast and 11 in whom axillary nodes were involved. One of the three patients with localized disease survived seven and one-half years, while the other two survived three and one-half years at the end of which one was dead and the other was lost to follow-up. All of the 11 patients with axillary spread were dead in less than five years. The 12 patients with tumors found and treated during nursing appeared to have been treated more promptly than those in whom the tumor was first found in pregnancy. There was an average delay in treatment in this group of 3½ months and an average survival period of 52 months. Three of the 5 without axillary spread and 2 of the 7 with it in this group of 12 survived five years or more. Of the 12 patients operated on for breast cancer who later became pregnant, 7 survived 10 years or more, 2 of these for 34 years without recurrence. The interval between operation and subsequent pregnancy in all was four years or less.

The authors conclude that about one-third of the patients who develop breast cancer during the child-bearing period will have pregnancy as a complication during or after the occurrence of the cancer. Patients treated during pregnancy or nursing without spread of the disease beyond the breast have a prognosis similar to that which prevails in the absence of pregnancy or lactation. Patients with axillary spread of the cancer are usually in an advanced state of disease because of delay in treatment. The prognosis of patients who become pregnant after operation appears to be unusually good. Although abortion, spontaneous or induced, did occur in six patients, there was no evidence that it had produced any benefit.

Causes of Reintervention After Gastric Resection for Peptic Ulcer: A Contribution to the Study of the Complications in Stomach Operations. A. Medici and L. Contorni. Ateneo parmense **27**:445-471 (May-June) 1956 (In Italian) [Parma, Italy].

The authors studied the causes for reintervention after gastric resection for peptic ulcer and the late complications that occur after operations on the stomach. All the cases treated in their institute in the last four years were critically reviewed. From January, 1952, to February, 1956, of a total of 2,828 surgical interventions, 457 were concerned with gastroduodenal pathology. Reintervention on the jejunal stoma was performed in 53 or 11.67% of all cases. In 43 cases reintervention was made necessary by lesions that occurred on the stomach or the duodenum or by some acute complication such as perforation. Only from 80 to 85% of the patients were well after the first operation. Postanastomotic peptic ulcer is the predominant chronic or late complication that calls for reintervention. Polyposis of the anastomotic stoma is a very rare lesion after gastroduodenal resection for peptic ulcer.

Bleeding Esophageal Varices: A Study of the Cause of the Associated "Hepatic Coma." W. V. McDermott Jr., J. Wareham and A. G. Riddell. Ann. Surg. **144**:318-335 (Sept.) 1956 [Philadelphia].

In a group of 118 patients with portal hypertension who entered the hospital with massive gastrointestinal bleeding, 68 died. Only 18 of these 68 deaths were directly attributable to exsanguination, and 12 were due to causes not related to hepatic function. Thirty-eight of the patients who died in coma did so without manifesting either severe shock or uncontrollable and exsanguinating hemorrhage. This indicates that blood loss alone does not account for the high mortality. This paper is concerned with experimental and clinical studies designed to clarify the role of massive gastrointestinal hemorrhage in precipitating the so-called hepatic coma. Ten experiments were carried out on five healthy adult mongrel dogs in whom an Eck fistula had been constructed from 1 to 20 months before the experiments. Normal adult mongrel dogs on which three experiments were done were used as controls. The implications of these experiments on animals

are discussed in connection with the results of clinical studies on 18 patients with bleeding esophageal varices and concomitant central nervous system symptoms who entered the Massachusetts General Hospital during the years from 1953 to 1955.

All of the patients studied showed striking elevations in the peripheral blood ammonia level, and the degree of elevation correlated well with the severity of the central nervous system symptoms. Some biochemical abnormalties associated with the introduction of blood into the gastrointestinal tract in the presence of spontaneous or surgically constructed portal-systemic shunts suggest that the syndrome of hepatic coma so commonly seen in patients with bleeding esophageal varices is due to ammonia intoxication. A program for the management of bleeding esophageal varices is outlined. Control of hemorrhage is of primary importance, because, even though there is no apparent threat of exsanguination, it is imperative to prevent the accumulation of a nitrogenous pool in the gastrointestinal tract. This may be accomplished initially by balloon tamponade and, when stabilization has been achieved by transfusions, by direct transthoracic ligation of the varices. Most of the blood can be removed by catharsis. Antibiotics should be given, because by depressing the bacterial count in the gastrointestinal tract the sources of urease and aminoacid oxidase can be controlled. L-glutamic acid has proved to be a valuable adjunct to therapy and may be given orally or parenterally in the glutamate form.

Wound Healing: A New Perspective with Particular Reference to Ascorbic Acid Deficiency. J. E. Dunphy, K. N. Udupa and L. C. Edwards. Ann. Surg. **144**:304-317 (Sept.) 1956 [Philadelphia].

Experiments were conducted on 72 male guinea pigs weighing between 250 and 350 gm. Thirty-two animals were used as normal controls and 40 were placed on the standard scorbutogenic diet of Sherman for 20 days before wounding. The control animals were given a diet supplemented with vitamin C in the form of fresh vegetables and oranges. Wounding was done as follows: Under ether anesthesia the back of the animal was shaved and the skin prepared with a 2% isopropyl alcohol solution. Two circular wounds were made on the interscapular area of the back of each animal measuring about 3 cm. in diameter. The skin, subcutaneous tissue, and superficial muscles of the back were excised. Bleeding points, if any, were clamped and ligated with fine catgut. No dressings were applied. The wounds were allowed to heal without any further local treatment. On the 4th, 8th, 12th, and 16th days after wounding, the animals were killed by an overdose of ether anesthesia. One of the two wounds in each animal was utilized for histological and histochemical studies and the other for chemical analyses.

Chemical and histochemical studies provide a new perspective of wound healing based upon a "humoral" as well as a "cellular" approach. Significant differences in the pattern of healing in normal and depleted animals can be detected by these methods. In ascorbic-acid-deficiency fibroplasia, mucopolysaccharide production and the formation of reticular procollagen material are not inhibited and may be considerably increased. The basic defect of repair in ascorbic acid deficiency appears to be one of collagen synthesis. Evidence is presented to show that this defect is corrected within 24 hours after the intramuscular administration of ascorbic acid. A sponge biopsy technique that permits the study of repair by these methods in primarily closed wounds is described. Preliminary observations indicate that it can be applied effectively to a study of wound healing in man.

The Management of Inguinal Hernia in Infancy and Early Childhood. C. W. McLaughlin Jr. and C. Kleager. A. M. A. J. Dis. Child. **92**:266-271 (Sept.) 1956 [Chicago].

The authors report observations on a consecutive series of 298 inguinal hernias seen in 240 infants and small children on the surgical service of Children's Memorial Hospital in Omaha. Inguinal hernia was the commonest congenital lesion for which infants and children were admitted to this hospital. Two hundred seventeen of the patients were males and 23 were females. In almost 60% of the children the hernia was noted before they completed their first year of life. Twenty-six infants were admitted with incarcerated hernia, but no strangulation of intestine was observed in an infant. This series of 298 hernias included 20 with associated hydroceles and 5 with hydroceles of the testis. Eleven patients in this group had undescended testes cared for at the time of herniorrhaphy. More than three-fourths of the complicated hernias in this series occurred in infants under 6 months of age. During the past 15 years the authors have recommended the immediate repair of all inguinal hernias regardless of age. While herniorrhaphy is a more difficult operation in a child under the age of 3 months than it is in older children, familiarity with the infant anatomy, the use of fine instruments, and, above all, delicate handling of tissues make it a sound surgical procedure.

Effect of Bilateral Adrenalectomy on Metastatic Choriocarcinoma from Teratoma of the Testis. N. S. R. Maluf, R. K. Loeffler and E. E. Erickson. J. Clin. Endocrinol. **16**:1217-1226 (Sept.) 1956 [Springfield, Ill.].

Although it is plausible to consider that the growth of testicular tumors may be under hormonal control, there is no clear example of regression of a testicular tumor or of its metastases after orchiectomy or adrenalectomy except in patients also receiving radiotherapy. In the patient of this report, who had chorionic metastases from a teratoma of the testis, bilateral adrenalectomy produced no apparent benefit. Serial radiographs of his chest showed no change in the growth rate of measured discrete metastatic nodules.

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Prolonged Hypothermia in Treatment of Massive Cerebral Hemorrhage: A Preliminary Report. D. A. Howell, J. G. Stratford and J. Posnikoff. Canad. M. A. J. **75**:388-394 (Sept. 1) 1956 [Toronto, Canada].

In massive cerebral hemorrhage death is generally caused by the tentorial pressure cone. The cerebral hemispheres increase in volume, and this swelling displaces the brain-stem downwards, producing ischemia of the posterior diencephalon, midbrain, and pons. Ischemic necrosis continues as long as the pressure remains high in the hematoma, and it usually proceeds more rapidly in patients with high blood pressure. The slower-developing cerebral hematomas in normotensive patients may be evacuated at craniotomy in the first few days of illness. The brain can be made slack and the hemispheres reduced in volume in three different ways: by dehydration, arterial hypotension, and hypothermia. Reducing the cerebral volume by hypothermia has distinct advantages. This was demonstrated in eight patients with massive intracranial hemorrhage. The patients were cooled by means of ice bags in the groins and axillae, alcohol sponging, and fans until the rectal temperature fell to between 32 and 30 C (90 and 86 F). Opening the windows during the Canadian winter hastened the fall in temperature, and once a patient was immersed for an hour in a bath to which ice was added. The patients were placed semiprone to prevent inhalation of vomit, and care was taken to prevent the upper shoulder from dropping forward and obstructing the venous return from the head. Tracheotomy was employed on several occasions to facilitate aspiration of secretions. Chlorpromazine, 50 mg., was given by intramuscular injection at the onset, and half this dose was repeated whenever the patient shivered or vomited.

Hypothermia influenced the course of the disease in every patient. Seven showed some improvement and two survived. Survival of two of eight patients with fulminating spontaneous intracranial hemorrhage is not an impressive result. However, in no case was prolonged hypothermia without influence. The progress of the pressure cone was arrested, and there was a dramatic improvement. Gastric hemorrhage was the most serious complication. It developed in four patients and possibly in a fifth either during the hypothermia or up to seven weeks after the onset of the illness. The authors attribute it to the small superficial ulcers secondary to brain damage of the type described by Cushing. Such ulcers were found at autopsy in two patients. This complication was unexpected, as gastric hemorrhage is not commonly seen in patients with cerebral hemorrhage. Death was averted in later cases by blood transfusions. One patient had a severe nosebleed most easily attributed to hypertension, and another was found, at autopsy, to have an

adrenal hemorrhage. Mild uremia developed in all patients, and anuria in three. Pneumonia was a serious complication in three patients. Aseptic venous necrosis developed in two patients, possibly as the result of the negative water balance. Weeping eczema of the scrotum was seen in one patient, possibly caused by prolonged contact with ice bags. Various auricular arrhythmias were transient and harmless. Prolonged hypothermia is a powerful method of reducing the cerebral volume and thereby relieving the acute tentorial pressure cone.

Hereditary Pellagra-like Skin Rash with Temporary Cerebellar Ataxia, Constant Renal Amino-Aciduria, and Other Bizarre Biochemical Features. D. N. Baron, C. E. Dent, H. Harris and others. Lancet **2**:421-428 (Sept. 1) 1956 [London, England].

Preliminary studies are reported on a new syndrome that began in 1951 when a boy was hospitalized who apparently had severe pellagra associated with a neurological disorder. His urine contained a consistently large amount of amino acids. This led to many further biochemical investigations, and it soon became apparent that he had a bizarre and hitherto undescribed syndrome. Studies of the boy's relations revealed similar biochemical features in three of his seven siblings, one of whom had been admitted several years previously to the Middlesex Hospital with a similar pellagra-like syndrome. The eight siblings were the offspring of a first-cousin marriage. The most constant clinical feature of this new disease, which has been referred to as Hart's syndrome, or now preferably as "H" disease, is a tendency to develop a rough reddened skin on exposure to moderate sunlight. In two of the siblings, greater exposure led on more than one occasion to a severe rash that appeared identical with that of pellagra. On occasion a severe but fully reversible cerebellar ataxia developed in association with the rash and also (in one of the patients) following infective disease without rash. The older affected siblings are also mentally retarded.

Among the biochemical findings is a constant gross renal aminoaciduria of unique pattern, without other evidence of renal dysfunction. This is the most specific abnormality by which the disease can be identified. There is also a constant large excretion in the urine of indole-3-acetic acid and a less constant large excretion of indican. The feces contain a moderately increased quantity of protoporphyrin. The authors wonder if the immediate biochemical disorder producing the clinical syndrome is an abnormality of nicotinic-acid utilization. In recent years a number of new clinical syndromes have been described in association with gross metabolic disorders. The biochemical disorder usually helps to diagnose the disease since it may be more constant and characteristic than are any of the clinical features. This latter point especially applies to hereditary diseases, where the action of a gene may show itself by a constant gross biochemical abnormality even when the clinical signs remain ambiguous and fluctuate in intensity.

A Psychotherapeutic Technique with Large Groups in the Treatment of Alcoholics: A Preliminary Report. J. J. Armstrong and R. J. Gibbins. Quart. J. Stud. Alcohol **17**:461-478 (Sept.) 1956 [New Haven, Conn.].

The authors found that in the early stages of treatment alcoholic patients frequently remain anxious and easily disturbed, with many defenses against obtaining much-needed insight through formal psychotherapeutic interviews. Many alcoholic patients present personality problems that involve difficulties in their dealings with authority. The group setting, however, is often comparable to aspects of a society the patient is used to, in that it is composed of people with similar attitudes, interests, and abilities, but not drinking at the moment. An attempt was made to establish a group with some homogeneity. Originally, the only patients accepted for the group were those who were undergoing or had undergone individual psychotherapy or at least a psychiatric evaluation. Soon patients were directed to the group right from the intake conference. The weekly attendance gradually rose to an average of 35, which prevailed during the period of the present study. Of 32 persons who attended at least 15 sessions, 23 improved, 7 could not be traced, and 2 received no help. The conclusion was reached that the group method of treatment for alcoholics provides certain distinct advantages over individual therapy by lessening the patient's need to reject authority as symbolized by the therapist, reducing anxiety engendered by transference situations, allowing a more permissive setting than rigidly scheduled individual interviews, and permitting a sharing of experiences toward a common goal with others having comparable problems.

Intraspinal Epidermoid Tumours (Cholesteatomas) in Patients Treated for Tuberculous Meningitis. C. Choremis, D. Economos, C. Papadatos and A. Gargoulas. Lancet **2**:437-439 (Sept. 1) 1956 [London, England].

Dermoid and epidermoid tumors in the central nervous system are variously called pearly tumors, epidermoid teratomas, dermoid endotheliomas, and cholesteatomas. The usual sites of these tumors are the lumbosacral spinal canal, the middle ear, the vicinity of the pituitary gland, and between the tables of the skull. At the Children's Clinic of the University of Athens the authors recently had occasion to study five children, ranging in age from 7 to 12 years, who had pearly tumors in the thoracolumbar spinal canal. All these children had been successfully treated from three to seven years earlier for tuberculous meningitis. The authors believe that the two conditions are closely related. They think that repeated lumbar punctures in the course of streptomycin therapy may implant epithelial cells which in time form these tumors. They hope that this report will alert physicians to the recognition of a curable condition arising as a complication of the treatment of tuberculous meningitis.

The Pathological Effects of Cerebral Arteriography. T. Crawford. J. Neurol., Neurosurg. & Psychiat. **19**:217-221 (Aug.) 1956 [London, England].

Cerebral arteriography is usually without harmful effects; nevertheless, there is inevitably some damage to the arterial wall, and in a very small proportion of cases harmful effects ensue. Crawford reports observations on autopsy material from 75 subjects on whom arteriography had been carried out at intervals varying from two hours to eight months before death. This material came from many different sources and was not confined to the autopsies from a single neurosurgical unit. The most serious ill effects observed were carotid thrombosis and cerebral embolism. It was not possible to assess the frequency of these rare misfortunes. They are more liable to occur in elderly hypertensive arteriosclerotic patients.

Infantile Encephalomalacia with Multiple Cavity Formation. B. J. Alpers, R. A. Farmer and H. E. Yaskin. A. M. A. Arch. Neurol. & Psychiat. **76**:229-235 (Sept.) 1956 [Chicago].

The authors report on studies on the brain of a boy who died at the age of 3½ months and in whom encephalomalacia with multiple cavity formation was discovered. The mother was in good health during pregnancy but one week before delivery had an attack of pneumonia. There were no seizures at birth. At 2 weeks of age the infant developed "growling respiration," and at 7 weeks he had a bloody nasal discharge, extending his arms stiffly, and had a staring gaze. At 11 weeks he had attacks of cyanosis, in which he was found to twitch, stiffen out, and clench his fists. He had a generalized convulsion at 14 weeks. Examination at this time revealed that the child was unconscious, with hyperpnea, bilateral papilledema, retinal and subhyaloid hemorrhages, and generalized hyporeflexia. The spinal fluid and subdural fluid were grossly bloody. He had an erythrocyte count of 2,700,000 and 41,000 leukocytes per cubic millimeter, with lymphocytes predominating. He died within a few hours after his seizures.

Numerous cystic areas were found in both gray and white matter of the brain and in the basal ganglia regions, sparing brain stem and cerebellum. Microscopic study revealed piaarachnoid thickening, profuse gitter-cell accumulation with cyst formation, often focal gitter-cell collections, calcium deposits in some of the areas of necrosis, and areas of only partial destruction of tissue. The blood vessels were on the whole intact, but endothelial swelling was present in some regions and many perivascular spaces were filled with macrophages and mononu-

clear cells. The features recorded in this case correspond well with those previously reported. Variations in the location and extent of the lesions have been observed from case to case. The outstanding variation in the present case consisted in extensive involvement of both the gray and the white matter. The pathogenesis of the encephalomalacia is not clear.

A Controlled Clinical Study of Chlorpromazine and Reserpine in Chronic Schizophrenia. M. Shepherd and D. C. Watt. J. Neurol., Neurosurg. & Psychiat. 19:232-235 (Aug.) 1956 [London, England].

Shepherd and Watt tried to assess the relative merits of chlorpromazine and reserpine. Twenty-four of the most deteriorated and apathetic female schizophrenic patients in a county mental hospital were chosen. Their ages ranged from 27 to 52 years. The length of stay in hospital varied from 7 to 29 years. Most patients were totally unoccupied, withdrawn, and unsociable. They took no interest in their appearance or personal care and were incontinent of urine. Talk was so seriously disordered that an intelligible conversation was impossible. Many patients were mute; a few were noisy, interfering, hostile, or destructive to clothing and property. The 24 patients were divided into three groups of eight by random selection. The experiment lasted 18 weeks, during which each group of patients received each of three substances—reserpine, chlorpromazine, and placebo, in different orders of administration. Chlorpromazine was responsible for improvement in a significantly higher proportion of cases than reserpine, and, in the doses employed, reserpine was responsible for the great majority of toxic effects observed. No satisfactory explanation for these differences can be offered because of the obscurity attending the mode of action of reserpine. It may be significant that the schizophrenic patients in the present study were chosen not for their aggressiveness and overactivity, as in most of the other studies cited, but because of their apathy and inertia.

Pyridoxine (Vitamin B_6) in Alcoholism. G. W. Atkinson and W. C. Kappes Jr. Virginia M. Month. 83:391-393 (Sept.) 1956 [Richmond, Va.].

Observations were made on 70 unselected patients with alcoholic intoxication. Thirty-five of these patients were given 500 mg. of pyridoxine hydrochloride (vitamin B_6) twice a day, whereas the other 35 served as controls, receiving only the treatment given to all of them. There was no significant difference in the recovery rate of those treated with pyridoxine and in the controls. The excretion rate of the alcohol was not altered by the pyridoxine, and no beneficial effect or change was observed after its use in alcoholic patients who had psychoses and convulsions. Although pyridoxine has been advocated by a number of observers for the treatment of alcoholic intoxication in human subjects, in experiments on mice it has proved ineffective or even dangerous in large doses.

Pseudotumor Cerebri: Benign Intracranial Hypertension. L. M. Davidoff. Neurology 6:605-615 (Sept.) 1956 [Minneapolis].

The author reports on 61 patients between the ages of less than 5 and more than 50 years with "pseudotumor" or benign intracranial hypertension, all of whom had true papilledema. Most of them complained of headache, and many of them had failing vision. All but one had a normal ventricular system as revealed by pneumoencephalography (either ventriculography or lumbar encephalography). The cerebrospinal fluid was under increased pressure but otherwise within normal limits as far as cell count and protein were concerned. Many of the patients complained of diplopia, and these usually showed interference with one or both sixth cranial nerves. In four male and five female patients symptoms developed after otitis media. In 11 male and 12 female patients symptoms developed after infections in the body elsewhere than in the ears or mastoids, or after a head trauma. The last group of 29 patients, 18 of whom were women, gave no history of preceding infection. The peak of the incidence in this group was in the fourth decade of life. Unusual obesity was noted in 3 of the 18 women.

The causation of this condition is still unknown and is probably variable. Patients in whom symptoms are preceded by infection of an ear or mastoid may well have mural thrombi in the superior longitudinal sinus or the major lateral sinus extensive enough to interfere with cerebrospinal fluid absorption. To some extent this may also be true of patients with preceding infection elsewhere than in the ear or mastoid, or with cerebral trauma. In the group of 29 patients in which the syndrome occurred more frequently in women and was more common in the middle decades of life, the condition may have been of a toxic or allergic nature, and in the women it may have been related in some manner to menstrual disturbances of electrolyte balance.

Subtemporal decompression was performed in 51 patients and suboccipital decompression in one. In nine patients treatment consisted of dehydration measures and repeated lumbar puncture, after which they were placed on a salt-poor diet; fluid intake was limited, and ammonium chloride or Diamox was administered. The patients were followed up for from one to 22 years. Most of them recovered, but five had complications, which consisted of convulsive seizures in two, a tense decompression and blurring of the disk margins in one, subdural hematoma in one, and a slight degree of diencephalic dysfunction and a somewhat greater degree of focal abnormality at the site of the decompression in one. The prognosis in most patients is excellent, although many months or even several years may be required for the syndrome to subside completely. Because of the favorable outcome in most patients and the uncertainty as to the causation of the syndrome, the term "benign intracranial hypertension," suggested by Foley, especially for those cases not preceded by infection or trauma, seems a desirable one.

Course of Exacerbations of Multiple Sclerosis in Hospitalized Patients. J. F. Kurtzke. A. M. A. Arch. Neurol. & Psychiat. 76:175-184 (Aug.) 1956 [Chicago].

At the Bronx Veterans Administration hospital over 300 patients with a diagnosis of multiple sclerosis were hospitalized between 1944 and 1953, but in some of these the data for diagnosis were insufficient. This paper is concerned with the 220 patients in whom the diagnosis was definite. These patients were divided into two groups. Group A consisted of 175 patients whose present episode was of two years' duration or less before hospitalization. Group B was composed of 45 patients the duration of whose present exacerbation exceeded two years before admission and averaged four and one-half years. No patient improved whose present exacerbation had persisted for more than two years before admission. Of the 175 patients in whom the present episode had lasted less than two years, 33% improved, 50% had no change, and 17% became worse during a mean hospital stay of three and a half months. Thus one out of three patients improved while in the hospital with an episode that had persisted for less than two years before admission. Follow-up studies after hospitalization in one-third of this group revealed only three patients who improved later but who had not improved in the hospital. It was felt that the period of hospitalization, which averaged three and a half months, was sufficient for the investigation of possible prognostic features. The outcome of the present episode could not be correlated with the total duration of illness, the age on admission or onset, the type of neurological involvement, the severity of status on admission, the prior nature of the illness, the laboratory findings, the month or year of admission, or the month of onset of acute attacks.

Improvement or remission was inversely related to the duration of the episode before admission. Of the 28 patients in whom the present episode had existed less than 7 days before admission, 24 improved, 2 remained unchanged, and 2 became worse; of the 14 in whom the present episode had existed between 8 and 14 days, 9 improved and 5 remained unchanged; of the 26 in whom the episode had existed for from 15 to 31 days, 10 improved, 14 remained unchanged, and 2 became worse; of the 75 in whom the episode had existed for from 1 to 12 months, 12 improved, 45 remained unchanged, and 18 became worse; and of the 29 in whom the episode had lasted between one and two years, 2 improved, 22 remained unchanged, and 5 became worse. This relationship of improvement to the duration of the episode may provide a standard for comparison and prognosis in this disease.

GYNECOLOGY & OBSTETRICS

Neonatal Umbilicus as a Source of Streptococcal Infections in a Maternity Unit. J. M. Boissard and B. Eton. Brit. M. J. 2:574-576 (Sept. 8) 1956 [London, England].

Pyrexia developed suddenly in a puerperal woman six days after an uneventful delivery. Mother and infant were removed to the isolation ward. Culture of the mother's vaginal swab yielded a heavy growth of Streptococcus pyogenes type 9. Nose and throat swabs were cultured from the ward staff and vaginal, nose, and throat swabs from all patients. None showed Str. pyogenes. A midwife, who had been working on the ward for only a week, went on leave two days before pyrexia developed in the puerperal woman. Acute tonsillitis, later shown to be due to Str. pyogenes type 9, developed in the midwife while she was at home, on the same day the puerperal woman had shown pyrexia. The infections in the mother and midwife manifesting themselves on the same day suggested a common source rather than one that was derived from one or the other, and the findings in the infant (cultures from throat and umbilical cord yielding Str. pyogenes type 9) prompted investigation of the nursery from this point of view. Cultures of swabs of the umbilicus of four infants who had been discharged from the nursery yielded Str. pyogenes type 9. Although these infants were widely dispersed at the time of this investigation, it seems certain that they acquired their umbilical infection in the ward nursery—the one environment originally common to all.

The authors show that the infections in the adults were accidents in what was primarily a series of infections in infants. There was never a time from the beginning of the earliest-known infection until the closure of the ward when the nursery was free from infection. Nothing is known about how or when infection entered the nursery, but it seems reasonable to suppose that the most likely route was via an attendant who was in the early stages of an unrecognized infection. The outbreak demonstrates the following points: 1. In a maternity hospital the nursery was the source of infections due to Str. pyogenes. 2. Without investigating the nursery it would have been impossible to find a connecting link between the infected adults or to detect the source of their infection. 3. If the nursery had not been investigated, it might not have been possible to control the outbreak of streptococcic infections. The authors make a plea for bacteriological investigation of the nursery whenever a case of streptococcic infection is found in a mother or a member of the staff.

The Combination of Prednisone and Methylandrostendiol in the Treatment of Advanced Cancer of the Uterus. G. Pescetto. Minerva ginec. 8:552-556 (July 15) 1956 (In Italian) [Turin, Italy].

Fourteen patients with cancer of the uterus in an advanced stage were treated with a combination of prednisone and methylandrostendiol. The author divided the patients into three groups. To the first group belonged six patients with uterine cancer located in the portio or in the body of the uterus. Surgical intervention had to be excluded because of the advanced stage of the disease. These patients were subjected to roentgenotherapy for a minimum of 9,000 r and a maximum of 12,000 r. Five of the six patients could no longer tolerate irradiation. To the second group belonged five patients with relapse of cancer of the uterus. These patients had received from 9,000 to 12,000 r. Severe pain was present. To the third group belonged three patients with cancer of the portio who received radium and roentgenotherapy. Marked cachexia and severe pain were present.

The dose of the combination was 100 to 150 mg. of prednisone and 100 to 150 mg. of methylandrostendiol, depending upon the condition of the patient. Treatment lasted 20 days, and in five patients it was started again after a 10-day interval. For the first five or six days after the treatment, 10 to 15 mg. of prednisone per day was given. Pain was markedly relieved in 80% of the patients, and in the others it was diminished. The general and psychic condition of the patients improved. The combination of the two drugs protected the patients against x-ray sickness. The negative aspect of the treatment lies in the short duration of the results, the lack of any evident effect of the drugs on the neoplasia, and the very high expense involved.

Cancer of the Cervix, an Appraisal. J. V. Meigs. Am. J. Obst. & Gynec. 72:467-478 (Sept.) 1956 [St. Louis].

Meigs reviews the results obtained in 130 patients with cervical cancer in whom he personally performed the operation. The following patients survived five years: Of 61 who received surgical treatment only, 55 (90%); of 29 who were subjected to surgery after radiation had failed, 18 (62%); of 20 who were operated on after cure had been achieved by irradiation (no cancer found at operation) 19 (95%); of 10 in whom surgery was followed by postoperative irradiation (surgical failures), 3 (30%); and of 10 who received irradiation before and after surgery (radiation and surgical failures), one (10%). The 10-year survival rates indicate that those treated by surgery alone obtained results that were as favorable as those treated by irradiation plus surgery, but it should be remembered that the patients operated upon were probably the best-risk patients. It is conceivable that surgery will cure some radiation failures and that radiation will cure some of the surgical failures. This definitely indicates the importance of selection. The author hopes that study of the sensitization response and of the radiation reaction will help in the work of selection. The cure of patients in whom the lymph nodes have been invaded is excellent, running from 31 to 55% in the five-year results and to from 25 to 40% in the 10-year results. Radiation therapy seems to be as effective in patients with as without invasion of the lymph nodes. This study suggests that radiation and surgery are complementary and that results in the hands of experts will be good whichever method is used, but it does show the importance of selection.

The Pregnant Diabetic: A Report of 200 Cases. S. G. Clayton. J. Obst. & Gynæc. Brit. Emp. 63:532-541 (Aug.) 1956 [London, England].

This report is based on the records of 201 pregnancies in 176 diabetic patients. Although delivery was carried out by cesarian section in 122 patients and by abdominal hysterectomy in 6, and delivery was induced in most of the others, there was only one maternal death. This low maternal death rate, however, does not imply that there is no risk; on the contrary, the risk is great in those in whom albuminuria occurs during the early months of pregnancy, in those with retinal hemorrhages, and in those with hypertension. These patients may not all have the same pathological changes, but many probably have glomerulosclerosis (Kimmelstiel-Wilson syndrome). The fetal mortality remains high when pregnancy is complicated by diabetes. The three multiple pregnancies (two twin and one triplet pregnancy) produced only two living infants. In the 198 pregnancies with single fetuses only 132 infants remained alive; the pregnancy was terminated in 8 cases, spontaneous abortion occurred in 7, stillbirth in 21, and neonatal death in 30. The weight of the infants of diabetic mothers is often excessive, but the overgrowth of the placenta is even more pronounced, being about 25% instead of the normal 17% of the fetal weight at 36 weeks of pregnancy. Hydramnios occurred in 48% of the single-fetus pregnancies.

If diabetic pregnant women are permitted to go to full term, the fetus not infrequently dies in utero during the last four weeks of pregnancy. On the other hand, if the infant is delivered prematurely, there is a considerable risk of neonatal death. The relative frequency of these two modes of death will depend on the obstetric management, and since most of these women were delivered at about the 36th week the stillbirth rate in this series is relatively low. All the intrauterine deaths recorded here occurred between the 32nd and 36th weeks of pregnancy, and, because of the author's policy of delivery at about the 36th week, the risk of intrauterine death after that time could not be ascertained. If control of the diabetes is poor, the number of intrauterine deaths is increased, but even with good control not all these deaths will be prevented. The neonatal deaths occurred most frequently after cesarian section, probably because that was the commonest mode of delivery (122 cases). The child is delivered together with the usual flood of amniotic liquor. Often large quantities of fluid are aspirated from the air passages and from the stomach. All goes well for a time, but after a few hours respiratory distress begins, with successive cyanotic attacks until circulatory failure occurs. This mode of death was seen in 23 of 30 cases, and in all those in which an autopsy was performed

absorption atelectasis resulting from hyaline membrane formation in the air passages was found. The average time from birth to death was 13 hours.

A Comparative Study of Different Techniques for the Diagnosis of Cervical Carcinoma. H. E. Nieburgs. Am. J. Obst. & Gynec. 72:511-515 (Sept.) 1956 [St. Louis].

Not only racial, social, and age factors but also the techniques employed help to explain the conflicting reports on the number of cases of cervical carcinoma detected by exfoliative cytology. Three techniques were compared in 154 patients, including 73 women with different epithelial lesions of the cervix. A cotton applicator was used to prepare a smear from the posterior fornix. The endocervical smear was obtained by insertion of the cotton applicator into the cervical canal and twirling it around a few times against the squamocolumnar junction. The smear was made by rolling the cotton applicator in the counterclockwise direction on the slide in order to secure complete transfer of the cervical mucus plug to the glass. The third technique employed was the use of Ayre's wooden spatula for the scraping of the cervix without prior removal of the mucus plug. The smear from the posterior fornix was less satisfactory than those obtained from the endocervix. The occurrence of false-negative smears obtained from the endocervix seems to depend on the order in which the smears are taken. The first smear made appears to be the more satisfactory, apparently because of the fact that the endocervical mucus plug, which usually carries a larger number of cancer cells, was utilized. Smears obtained with the cotton applicator or spatula following the removal of the mucus plug may result in false-negative slides. Although in positive cases the spatula smears contain a larger number of cells, for routine cancer detection less time seems to be required for the interpretation of slides when the cotton applicator smears are used.

Pelvic Carcinoma Following Irradiation for Benign Gynecological Diseases. J. P. Palmer and D. W. Spratt. Am. J. Obst. & Gynec. 72:497-505 (Sept.) 1956 [St. Louis].

The authors first studied the records of 377 women with cancer of the body of the uterus seen at the department of gynecology of Rosewell Park Memorial Institute between 1947 and 1952. They found that 21 patients had had previous irradiation of the pelvis, 17 for benign uterine conditions and 4 for nonuterine pelvic cancer. The average interval between the irradiation and the subsequent corpus cancer was 11.7 years. At Rosewell Park Memorial Institute, before 1940, the treatment of benign uterine conditions with radium or x-ray or both was common practice. Since 1940, irradiation for benign bleeding has been given only if surgery was contraindicated. This change of policy came with the realization that occasionally a patient who had had irradiation for benign bleeding would return with uterine or other pelvic cancer. Realizing the long intervals elapsing between irradiation and the development of cancer, the authors considered in their further investigations only patients treated prior to 1941. Questionnaires were mailed to 1,670 patients who had been treated between 1930 and 1940 with radium and/or x-ray for benign uterine abnormalities. The women were asked (1) their opinion as to whether the symptoms were relieved, (2) Whether these symptoms later recurred, and (3) Whether any pelvic operation or irradiation was subsequently necessary. If question 3 was answered "yes," the doctor and/or hospital was then asked for full data. Adequate replies were received from 721 patients. All of these patients were followed for 12 or more years; the average follow-up was 16.08 years. It was found that pelvic cancers had developed in 61 or 8.4% of the 721 patients. The authors also cite figures on the expected incidence of cancer, comment on the rôle of fibroids and endometrial hyperplasia in the causation of cancer of the body of the uterus, and compare radiation dosages.

They conclude that their detection of a higher incidence of pelvic cancer developing after irradiation can be explained by the fact that the follow-up of other investigators was not long enough. They found a rather low incidence of menorrhagia of the menopause in patients with cancer of the body of the uterus, and they deduce from this that menorrhagia, or its underlying cause, is not a significant predisposing influence in the development of subsequent malignancy of the corpus uteri. They believe that the previous irradiation is, at least in part, responsible for the subsequent cancers. Also, since the patients with controlled cancer of the cervix did not show the high incidence of subsequent cancer of the adjacent pelvic structures, they believe that the relatively low irradiation dosage given the group with benign lesions caused some growth-stimulating influence that the higher, cancerocidal dosage did not cause. Irradiation castration should be used only in women who are not satisfactory surgical risks and, if used, should probably be given in dosage adequate to overcome the possible growth-stimulating influence. The authors continued their studies after they wrote this report, and in an addendum they add 25 patients to the 721 originally studied. They also add 10 pelvic cancers to the 61 mentioned in the paper. The shortest interval between irradiation and cancer development was 13 years and the longest 23 years; the average was 17.3 years.

The Outcome of Pregnancy Complicated by Threatened Abortion. E. P. N. Turnbull and J. Walker, J. Obst. & Gynæc. Brit. Emp. 63:553-559 (Aug.) 1956 [London, England].

It is generally considered that if bleeding ceases and a pregnancy complicated by threatened abortion continues, the end-result will be good, but the observation that the hemoglobin and red blood cell levels in the baby's cord blood at birth were higher than normal when there was a history of threatened abortion suggested that the oxygen supply of these fetuses had been abnormal. The authors present data on oxygen and hemoglobin levels and red blood cell counts in the cord blood of the fetus from pregnancies complicated by threatened abortion. A study of the outcome of pregnancy in cases of threatened abortion in Aberdeen Hospital cases indicates that the danger to the fetus is not over when the bleeding ceases. Of 155 women leaving hospital after apparently successful treatment of threatened abortion, 19% subsequently aborted. For those delivered after the 28th week, the prematurity, obstetric death, and antepartum hemorrhage rates were approximately three times as great as the average for all booked patients and the incidence of fetal abnormality about twice as great. The excessive fetal death rate was associated especially with prematurity and antepartum hemorrhage. The high proportion of very small babies was explained largely by the high incidence of premature labor, but there was also a suggestion that fetal growth was slightly depressed after threatened abortion. Neither the raised incidence of fetal abnormalties nor the type thereof was clearly related to the time of onset of bleeding. It is difficult to say whether these findings can be explained by a persisting or recurrent maternal defect that caused first threatened abortion and later antepartum hemorrhage and premature labor or whether damage to the deciduoplacental site at the time of the initial bleeding was itself sufficient to cause permanent impairment of function. Possibly either or both mechanisms may be present in any given case.

PEDIATRICS

Freeze-Dried B. C. G. Vaccination of Newborn Infants with a British Vaccine. M. I. Griffiths and W. Gaisford. Brit. M. J. 2:565-568 (Sept. 8) 1956 [London, England].

The Danish BCG vaccine has proved uniformly satisfactory for use in appropriate dosage in newborn infants. It suffers, however, from the defects inherent in any living liquid vaccine and it produces complications of a minor, but nevertheless undesirable, nature in a small proportion of cases. An efficient dried vaccine would offer so many advantages over a liquid preparation that it would become the standard form for universal use. The difficulties encountered in the preparation of freeze-dried vaccines have been in conserving an adequate number of viable organisms that will remain viable and in reconstituting the dried mass to produce a uniform suspension with minimal clumping. For the past 18 months the authors have been using a freeze-dried vaccine prepared by the method described by Ungar, Farmer, and Muggleton. They have vaccinated 1,100 newborn infants with various batches of this vaccine. A batch containing approximately 10,000 viable bacilli per inoculating dose was soon found to be antigenically inadequate and was discontinued. Another batch containing approximately 1 million

viable organisms per inoculating dose was slightly more potent than the Danish liquid BCG in allergy production, but as it produced large lesions at the site of inoculation and glandular complications (5% of enlarged axillary nodes and 0.6% of nodal abscess formation) the authors consider that it is a little too potent for routine use. Two other batches containing 110,000–130,000 viable organisms per inoculating dose, although only very slightly less antigenic than the Danish vaccine, have produced no complications to date and appear to provide the optimal dose.

Agammaglobulinemia in Two Brothers. J. Haarstad. Acta med. scandinav. **155**:125-129 (No. 2) 1956 (In English) [Stockholm, Sweden].

The author describes a typical case of agammaglobulinemia in two brothers. The two patients, aged 9 and 4 years, the only children of parents with normal serum gamma globulin levels as revealed by paper electrophoresis, had been ill almost all their lives. Both had a history of abnormal susceptibility to infections, recurrent periods of rises in temperature without apparent cause, pulmonary symptoms, dystrophy, slight increase in weight, thin and slimy feces, and delayed static motor development. The absence of gamma globulins in the patients' serums was revealed by electrophoresis. The older boy was admitted to hospital for the treatment of an acute attack of pneumonia that responded to the administration of streptomycin and penicillin; these drugs, however, had no effect when used for prophylactic treatment. The effect of treatment with 0.1 gm. of gamma globulin per kilogram of body weight was uncertain in the older patient, but weekly injections of the same dose of gamma globulin had a good prophylactic effect in the younger patient.

Hibernation in Poliomyelitis. F. C. Matera, A. R. Alvarez, B. Mesz and others. Arch. argent. pediat. **27**:58-64 (Jan.-Feb.) 1956 (In Spanish) [Buenos Aires, Argentina].

Forty patients from 3 months to 14 years of age with poliomyelitis were treated by hibernation with the aid of chlorpromazine and promethazine. The patients were acutely ill with encephalitis, bulboencephalitis, bulboencephalospinal and ascending paralysis, and with intractable fever and severe metabolic disorders. They were given 1 mg. of chlorpromazine per kilogram of body weight intramuscularly one hour before the start of the treatment, as a test for sensitivity. Children below 3 years of age were given the drug intramuscularly in total daily doses of between 3 and 25 mg. per kilogram of body weight. The solution for intramuscular injection contained equal parts of the drug in the daily dose to be given plus 20 units of hyaluronidase for each cubic centimeter of the solution. The injections were given at intervals of 3 or 4 hours during the critical period, after which the intervals varied from 8 to 12 hours. Children between 3 and 14 years of age were given the drug intravenously in daily doses that varied between 2 and 8 mg. per kilogram of body weight. The total daily dose was prepared in a 5% dextrose solution and was given by infusion at an extremely slow rate. Warming of the patients (dehibernation) was started as soon as the acute symptoms were controlled. During this period the patient was given androgens, ascorbic acid, and corticoadrenal preparations. The symptoms rarely reappeared after the warming of the patient was started, but if they did the treatment was repeated. Simultaneously with hibernation, the patients were treated for their clinical condition. Hibernation reached a low degree in all patients, although large doses of the drugs had to be used at times. Duration of hibernation varied from four to nine days. Fever was lowered in 32 of the 40 patients. Five of the eight patients in whom fever persisted died. The treatment gave satisfactory results in 28 patients. In all, 12 patients died: 5 of the 8 with intractable fever, 3 out of the 15 who had tracheotomy, 3 out of 6 with edema, and one who died from respiratory paralysis during intravenous administration of the hibernating drugs. The authors conclude that hibernation has a sedative, hypnotic, hypothermic, and muscle-relaxing action by means of which the cellular metabolism is improved, the progression of specific lesions is prevented, and the reversibility of the lesions is assisted. This is a preliminary report.

A Distinctive Type of Biliary Cirrhosis of the Liver Associated with Cystic Fibrosis of the Pancreas: Recognition Through Signs of Portal Hypertension. P. A. di Sant'Agnese and W. A. Blanc. Pediatrics **18**:387-409 (Sept.) 1956 [Springfield, Ill.].

Four boys and three girls between the ages of 4 and 10 years with cystic fibrosis of the pancreas and clinically manifest cirrhosis of the liver were studied. All seven had pulmonary disease characterized by generalized obstructive emphysema and chronic bronchopneumonia in varying degrees of severity. The increase in concentration of chloride and sodium in the sweat, characteristic of patients with cystic fibrosis, was present in all. Five patients had pancreatic deficiency as shown by the absence of trypsin in the duodenal contents. Tryptic activity and viscosity of the duodenal contents were low in the two remaining patients. Hepatosplenomegaly was present in all patients, but none had jaundice. The lack of consistency in the results of so-called liver-function tests was notable, since in some of the patients they were normal even when the hepatic process, especially the portal hypertension, was quite advanced. Biopsy of the liver in five patients, obtained at laparotomy, revealed cirrhosis. In four of these the venous pressure in the portal system was found to be markedly elevated, and surgical shunting procedures were performed to relieve the increased tension. Liver biopsy was not performed in two patients, but all seven presented clinical evidence of portal hypertension, although the symptoms of hypersplenism, gastrointestinal bleeding, or ascites were much more severe in the five patients who were operated on. Two of the children died of progressive pulmonary disease and a third from uncontrollable gastrointestinal hemorrhage. Four patients are alive; one of these had no recurrence of gastrointestinal bleeding within three years after splenectomy and a splenorenal vein shunt, but her pulmonary status had deteriorated; one patient was doing well after a portacaval shunt; in one patient the liver involvement was less serious than the pulmonary condition, and one patient was doing well but hypersplenism had recently appeared.

The name multilobar biliary cirrhosis with concretions was given to the advanced hepatic process observed in these patients, to emphasize the distinctive character of the cirrhosis in cystic fibrosis of the pancreas. Stress is laid on the fact that symptoms appear only when portal hypertension develops, leading to ascites, hypersplenism, or gastrointestinal bleeding. In only 7 of the 325 patients with cystic fibrosis of the pancreas who were seen at the Babies' Hospital in New York between 1935 and 1955 did the disease progress to this syndrome. While the total number affected by this condition, therefore, is not large, a survey of the diagnostic files shows that it accounts in this hospital for one-third of the pediatric patients with cirrhosis of the liver from all causes and for a much greater proportion of the children with portal hypertension secondary to hepatic fibrosis. An operative shunting procedure may be needed, as gastrointestinal bleeding may be the greatest immediate risk to the patient. The hepatic area thus must be added to the ones frequently involved in cystic fibrosis of the pancreas, and this disease must be included among the important causes of portal hypertension secondary to cirrhosis of the liver in children.

Patent Ductus Arteriosus with Reversal of Flow: Clinical Study of Ten Children. R. C. Anderson, P. Adams Jr. and R. L. Varco. Pediatrics **18**:410-423 (Sept.) 1956 [Springfield, Ill.].

Eight girls and two boys between the ages of 16 months and 15 years with patent ductus arteriosus with reversal of flow (pulmonary artery to aorta) are reported on. Cyanosis of the nailbeds, often greater in the toes, was present in all. Exertional dyspnea occurred early. Murmurs were of no diagnostic value, but an accentuated pulmonic second sound was uniformly present. Right ventricular preponderance was revealed by the electrocardiogram in all patients. The size of the cardiac shadow varied in the roentgenograms, but there was usually prominence of the pulmonary artery segment. Six patients showed evidence of bidirectional shunts and one showed only a reversed shunt, while the data were insufficient for the determination of this point in the remaining three. Three patients were operated on, with a satisfactory result in one, a 16-month-old infant, in whom a biopsy of the lung taken in the course of the operation revealed

only minimal pulmonary arterial changes. Forty-five cases of patent ductus arteriosus with reversal of flow were collected from the literature. Most of them were in adults. Twenty-two patients were operated on, with good results in four, three of whom were children.

Patent ductus arteriosus with reversed flow must be differentiated from interventricular septal defect (Eisenmenger complex in particular), idiopathic primary pulmonary hypertension, interatrial septal defect, mitral stenosis, tetralogy of Fallot, chronic pulmonary disease, atrioventricular canal, truncus arteriosus, and single ventricle. The safest and simplest diagnostic test is the determination of oxygen saturation of samples of blood obtained simultaneously from the right brachial and femoral arteries. Angiocardiography and cardiac catheterization also provided helpful information. The diagnosis of reverse patent ductus arteriosus is not difficult to make if the entity is kept in mind. Patent ductus arteriosus with reversal of flow can no longer be considered rare. Surgical treatment of the condition has been very disappointing, especially in adults. There is reason to believe that surgical intervention very early in life may arrest or reverse the development of pulmonary changes, which contribute largely to the high surgical mortality in the older age groups; surgical treatment may thus yield a higher salvage rate.

Endocardial Fibroelastosis in Infants Associated with Thrombosis and Calcification of Arteries and Myocardial Infarcts. W. A Thomas, K. T. Lee, M. H. McGavran and E. R. Rabin. New England J. Med. **255**:464-468 (Sept. 6) 1956 [Boston].

The autopsy protocols and microscopic sections from two infants who had died with myocardial infarcts resulting from advanced disease of the coronary arteries with calcification were studied in an effort to obtain some clues to the cause and pathogenesis of the disease. The material from these patients was also compared with that from 24 infants with uncomplicated endocardial fibroelastosis, 2 infants with the left coronary artery arising from the pulmonary artery, 1 infant with endocardial fibroelastosis complicated by mural thrombosis and myocardial infarcts without calcific arterial lesions, and 5 rabbits with myocardial infarcts resulting from thromboembolism. The two infants with calcific arterial disease and myocardial infarcts were found to have in addition endocardial fibroelastosis (characterized by fibroelastic thickening of the endocardium of the left ventricle and cardiac hypertrophy), an association not previously reported. Both of these diseases are uncommon, so it is unlikely that they were associated only by chance. Consideration of various ways in which the relation between the two diseases might be explained led to the conclusion that the most likely possibility was that the endocardial fibroelastosis was the underlying process and that the arterial disease and myocardial infarction resulted from thromboembolism.

Copper Deficiency in Infants: A Syndrome Characterized by Hypocupremia, Iron Deficiency Anemia, and Hypoproteinemia. P. Sturgeon and C. Brubaker. A. M. A. J. Dis. Child. **92**:254-265 (Sept.) 1956 [Chicago].

Sturgeon and Brubaker report on five infants in whom hypocupremia and hypoproteinemia were associated with iron deficiency anemia. At the time of diagnosis the patients ranged in age from 6½ to 9 months, with the exception of one, who was 2½ years old. All had in common a mild degree of edema and pallor. All had moderate anemia, microcytosis, and profound reduction in the concentrations of serum iron and serum copper. The total serum iron-binding capacity was not increased. The serum protein concentration was reduced in all cases. There was no laboratory evidence of renal or hepatic dysfunction. The authors believe that since these children had subsisted on a milk diet to the exclusion of practically all other foods, nutritional inadequacy may have played a part in producing the described syndrome. Preliminary therapeutic tests indicate that the various deficiencies can be corrected simultaneously with an improved diet and that, independently of the other deficiencies, the hypocupremia can be corrected with the oral administration of copper sulfate.

OTOLARYNGOLOGY

The Nasal Entrance in Relation to Nasal Function. J. E. Poulin. J. Maine M. A. **47**:274-275 (Sept.) 1956 [Portland, Maine].

Respiration is influenced to a great extent by the relative size of the nostril. The size and position of the anterior nares is determined by the character of the nasal tip and its surrounding anatomic structures. A deflection of the air current by a collapsed, twisted, or depressed nasal tip can in turn influence the size and position of the nasal entrance and in so doing affect the nasal physiology. The number of nasal tip deformities that are congenital in origin is small in comparison to the number produced by nasal injuries. Many of the injuries occur among children in infancy and early childhood and go unrecognized. A trivial blow on a child's nose resulting from a fall will often displace the tip of the cartilage in its septum. These accidents are frequently disregarded by the parents, and the unfortunate child has a displaced tip cartilage that becomes worse as time goes on. The incidence of neglected nasal injuries in the adult male is much greater than it should be. It is especially common among boys who participate in dangerous sports such as hockey, basketball, and football. Boys often accept a nasal injury as a part of the game and do nothing about it until they experience difficulty in breathing in later years. It is of the utmost importance to make certain that nasal trauma has not involved the tip of the nose, but if it has, proper steps should be taken to correct it as soon as possible.

Significance of Allergy in Persistent Respiratory Infection. A. Dintenfass. A. M. A. Arch. Otolaryng. **64**:171-177 (Sept.) 1956 [Chicago].

An attempt is made to demonstrate the close association and interdependence of respiratory-tract infection and allergy and the need for a thorough understanding of both allergic and surgical principles in order to obtain maximum therapeutic benefits. The association of allergy and infection affects all parts of the respiratory tract, producing diverse but characteristic pathological patterns in the nose, paranasal sinuses, Eustachian tubes, each of the anatomic divisions of the ear, and the bronchial tree. The underlying physiological and pathological processes are described. Efficient treatment is dependent upon adequate study of the allergic state. The offending allergens must be avoided or used in desensitization. Properly selected and timed surgical procedures in conjunction with allergic therapy provide maximum improvement and more permanent relief. Representative case histories illustrate the essential principles involved.

THERAPEUTICS

A Clinical and Bacteriologic Evaluation of Novobiocin in Seventy-Five Patients. J. Z. Pearson, A. Somberg, I. Rosenthal and others. A. M. A. Arch. Int. Med. **98**:273-283 (Sept.) 1956 [Chicago].

Novobiocin is a new antibiotic produced by a species of Streptomyces and discovered almost simultaneously by two independent groups. The authors used novobiocin in 75 patients, of whom 9 had either leukemia or polycythemia; they were followed with leukocyte counts, platelet counts, and hematocrit readings to see whether a drop in any of these indices would occur while novobiocin was being administered. Pretreatment cultures were obtained from all of the 66 patients with infections. Novobiocin (Albamycin, Cathomycin) was given orally, either in capsule form or in suspension, and the daily dose was 30 mg. per kilogram of body weight in children or 2 gm. in adults.

The response in infections with Micrococcus pyogenes var. aureus (staphylococci) was generally good except in cases where chronic tissue changes predisposed to continued infection. Improvement was noted in patients with pneumococcic and β-streptococcic infections, but the response was often not so prompt and the eradication of the organism not so consistent as in cases in which penicillin is used. No improvement was

observed after administration of novobiocin to patients with infections caused by Enterococcus or Proteus organisms or in patients with actinomycosis or lung abscess. The median serum concentration of novobiocin after a standard dose was from 64 to 128 mcg. per milliliter, but there was wide variation. Untoward reactions were observed in 14 (18.7%) of the patients. Skin eruptions occurred in 12, eosinophilia in 5, leukopenia in 2, and jaundice in one. Eight of the patients were given a second course of novobiocin, and in five of these toxic signs or symptoms reappeared. Reactions to both proprietary forms of novobiocin (Albamycin, Cathomycin) were observed in two of the four patients to whom both were given. Strains of micrococci (staphylococci) resistant to novobiocin appeared in four patients treated for three months or longer.

Successful Treatment of Gonococcic Endocarditis with Erythromycin: Review of the Literature. D. S. Davis and M. J. Romansky. Am. J. Med. 21:473-480 (Sept.) 1956 [New York].

The authors report on a 23-year-old Negro woman in whom polyarticular arthritis developed during pregnancy five years after a probable primary gonorrheal infection. Under observation a systolic murmur first appeared and later became changing in character. A diastolic murmur also made a transient appearance. Coincident with the onset of murmurs, skin lesions of probable embolic nature appeared on the extremities. One of 10 cultures obtained during the initial period of observation yielded a growth of Neisseria gonorrhoeae, thereby confirming a diagnosis of gonococcic endocarditis. Specific therapy consisted of a total of 108 gm. of erythromycin administered orally and intravenously over a 32-day period. No growth was observed in nine blood cultures obtained during this course of treatment, and single blood cultures obtained on the fourth, sixth, and seventh days after cessation of therapy were negative. Marked objective and symptomatic improvement occurred during hospitalization lasting 53 days. Two and a half months later the patient was delivered of a healthy child without further untoward event. When last seen 10 months after the onset of her illness, the patient was still in excellent health. This is the first report of erythromycin therapy of gonococcic endocarditis.

Coumadin (Warfarin) Sodium: A New Anticoagulant. J. H. Nicholson and T. Leavitt Jr. New England J. Med. 255:491-501 (Sept. 13) 1956 [Boston].

Coumadin sodium is a monocoumarin compound, in contrast to Dicumarol, which is, as its name suggests, a dicoumarin compound. Unlike Dicumarol, cyclocumarol, Tromexan, and phenindione, Coumadin forms a stable sodium compound. The sodium derivative is soluble in water and forms stable solutions that can be administered parenterally. Its reported effectiveness by the oral, intravenous, intramuscular, or rectal route may reside in this property. The authors used this drug for acute thromboembolic episodes and prophylactic therapy in 100 patients in private practice and on the wards of the Lawrence General and Bon Secours hospitals. Coumadin sodium (Link's warfarin sodium) was given intravenously and orally. The induction of therapeutic hypoprothrombinemia (level of 35 to 10%) was relatively prompt. The use of heparin was limited to patients with pulmonary embolism, who received only about three or four doses of heparin. The initial dose averaged about 60 mg., and the daily maintenance dose by the continuous or intermittent method, based on daily prothrombin determinations, was about 10 mg. The maintenance dose, which was readily established, was generally consistent from day to day in the same patient. Fewer periods of "escape" from the therapeutic range occurred than with other anticoagulant drugs the authors had used.

Hemorrhagic phenomena, attributable to the drug, occurred in five patients (three had bleeding episodes and in two subcutaneous petechiae developed). Bleeding occurred only in patients who had undergone surgical treatment, and it subsided promptly after administration of phytonadione. No fatality was caused by the drug. These experiences and others reported in the literature indicate that Coumadin (warfarin) sodium is a more nearly ideal anticoagulant drug than any of its congeners now available. The drug deserves wide clinical application in thrombotic and thromboembolic disorders.

Effects of Tetrachlorethylene Without a Purge, Followed by Ferrous Sulfate in Ancylostomiasis. A. R. Pinto, F. C. Costa, L. V. deMeira and J. P. Viana. Am. J. Trop. Med. 5:739-741 (July) 1956 [Baltimore].

In 1954 it was demonstrated by Carr and co-workers in the Dominican Republic that tetrachlorethylene is more effective in the treatment of ancylostomiasis when it is not followed by a saline purgative. Pinto and associates tried this method in 165 patients in Portuguese West Africa. They found that the omission of the saline purge after treatment of hookworm infection with tetrachlorethylene increases the effectiveness of the drug, shortens the time of treatment, lowers its toxicity and cost, facilitates the administration of mass treatment, and improves the possibility of curing the disease.

PATHOLOGY

Immediate Passage of Tumor Cell Emboli Through the Liver and Kidney. I. Zeidman, W. J. Gamble and W. L. Clovis. Cancer Res. 16:814-818 (Sept.) 1956 [Chicago].

Experiments were made to ascertain whether or not tumor cell emboli could pass unarrested through the liver and kidney. The transplantable V_2 carcinoma was used in domestic rabbits and, in rats, transplantable Flexner-Jobling carcinoma, Murphy-Sturm lymphosarcoma, Lewis fibroma, and Lewis lymphoma. For transhepatic studies, tumor suspension was injected into the portal vein, and simultaneously blood was drawn from the vena cava just above the liver. The blood was then injected intravenously into a second animal. The development of tumors in the second animal indicated immediate transhepatic passage of tumor cell emboli in the first animal. In transrenal studies, tumor suspension was injected into the aorta above the kidneys, the blood was collected simultaneously from the renal vein, and this blood was injected intravenously into second normal animals. Immediate transhepatic and transrenal passage of tumor cell emboli occurred with all tumors used except the Flexner-Jobling. The incidences of such passage varied, being higher in tests with lymphoma cells. It is concluded that tumor cell emboli can pass unarrested through the circulation of both liver and kidney.

This report is one of a series dealing with the passage of tumor cell emboli through the circulatory bed of various organs. The problem was to determine whether or not tumor cells, circulating in the blood, may pass immediately through an organ, perhaps to lodge in a more distant organ. If so, this might account for some peculiarities in the distribution of metastases. For example, human cancers of the gastrointestinal tract occasionally metastasize to the lungs without producing visible liver metastases. Previously, it had been thought that this pattern of metastasis depends upon lymphatic and thoracic duct spread.

RADIOLOGY

Giant-Cell Tumors and Roentgen Treatment. S. Marzolla. Minerva med. 47:357-365 (Aug. 11) 1956 (In Italian) [Turin, Italy].

The author reports on nine patients with giant-cell tumor of bones who received radiological treatment. Five cases were controlled for many years. Very good results followed in all cases. The treatment gives good functional results and reduces to a minimum the danger of relapse. Doses must be moderate, because high doses may interfere with the rebuilding of the bone. The process of recovery is slow but certain. One sign of recovery not previously discussed in the literature is the diminution of transparency in the lacunar areas of the tumor before the deposition of calcium salts takes place. When recalcification starts, it proceeds slowly but steadily. A return to the normal architectural pattern of the bone cannot be expected; it will suffice to have a bone that is strong, solid, and resistant.

BOOK REVIEWS

Sports Injuries Manual for Trainers and Coaches. By Donald F. Featherstone. Foreword by R. Salisbury Woods, M.D., F.R.C.S. Cloth. $6. Pp. 132, with 24 illustrations. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1956.

In his introduction, the author says that, although there may be some disagreement regarding the advisability of teaching the treatment of injuries to laymen, athletic trainers and coaches who are not medically qualified will, nevertheless, continue to treat most sports injuries. He has, therefore, designed this compact manual of reference to indicate to the layman not only correct management but also the limits beyond which the services of a physician are absolutely required. In point of fact, most physicians who are called on casually to treat sports injuries, although they may be familiar with the anatomic derangement and are able to offer effective first aid and immediate treatment, probably know less about the prevention and long-term management of these injuries than the experienced trainer or coach. Every general practitioner and surgeon would do well to familiarize himself with the principles involved in the total treatment of these injuries, since there are lessons to be learned here in regard to the shortening of periods of disability and the preservation of function that can be applied to the treatment of injuries from other causes.

The first part of the book is devoted to a concise, accurate, and easily comprehensible explanation of the basic anatomy and physiology of the human body. Particular emphasis is placed on the principal muscle groups and their actions. The second part is devoted to the basic knowledge and equipment the trainer must have to be prepared to aid the injured athlete. The third part discusses methods of prevention; and the fourth part, the treatment of strains, sprains, contusions, abrasions, and lacerations and skin infections. There is a short chapter on the more serious injuries, emphasizing immediate medical assistance; there is also a chapter on miscellaneous injuries. Since the author is English, the American reader will find some unfamiliar medicaments and methods of management recommended. Placing the blame for some muscle strains on the presence of systemic foci of infection seems a little outdated. Certainly most surgeons and orthopedists would not approve as adequate treatment for a Bennett fracture the strapping of the injured hand with elastic adhesive tape. Also, current thinking about the origin and spread of dermatophytosis does not favor the prophylactic use of foot baths containing a mild antiseptic solution. The illustrations are good but few in number. In general, the advice offered is practical, sensible, and based on wide experience. This book can be particularly recommended to physicians who attend high school and college athletes, as well as to the coaches and trainers for whom it is intended.

Corneal Grafts. Edited by B. W. Rycroft, O.B.E., M.D., D.O.M.S. With foreword by Sir Cecil Wakeby, K.B.E., C.B., LL.D Cloth. $13.50. Pp. 286; 13, with 155 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3; Butterworth & Co., Ltd., 88 Kingsway, London, W.C.2; 1367 Danforth Ave., Toronto 6, Ontario, Canada, 1955.

The chapters in this book on the anatomy and physiology of the cornea and the ultrastructure and chemical composition, with a discussion on the mucoids, salts, and metabolism, are all worthy of the reader's critical attention. Francois and Rabaey (1953) stated that the disappearance or the decrease of the mucoid substance of the stroma promotes vascularization. Neovascularization is still the mortal enemy of the corneal graft, and, when its causative factor or factors become known, a great step toward the elimination of corneal opacification will have been made. The pathology of corneal opacities is thoroughly described, with the aid of excellent photomicrographs. Paufique, the father of lamellar keratoplasty, states that the old prejudice against lamellar keratoplasty was based on the unavoidable opaque connective tissue formed behind the graft. He claims that this is now avoidable, due to the progress in asepses, advances in technique, and the use of antibiotics. He carefully describes and beautifully illustrates the technique of partial lamellar keratoplasty, using some of the instruments that are more often used in Europe than in the United States. He enumerates the postoperative complications of lamellar keratoplasty and their treatments now in vogue in Europe.

Some of the special methods as described by Sourdille, particularly the mushroom graft of Franceschetti with his apparatus, are given in detail. The general complications of corneal grafting are discussed by Tudor Thomas, who points out that gray streaks and haze of the donor cornea are likely to produce vascularization of the cornea and opacity. The use of citrated saline solution lessens the tendency of the iris to become adherent to the graft and is without danger, especially when the cornea shows only slight vascularization. Another important highlight of this chapter is the discussion of the treatment with antihistamines in the first two weeks. This is advocated to lessen the chances of any reaction to antigens contained in the corneal tissue. Frederick Ridley makes an important practical point in the preoperative temporary fitting of contact lenses. This procedure can be used to make a direct comparison between the apparent thickness of the cornea and the contact lens in the slit-lamp beam. This is of exceptional value where lamellar keratoplasty is contemplated. Dr. Marc Amsler introduces a valuable clinical procedure that is not generally done in the United States: a diagnostic puncture of the anterior chamber and the examination of the aqueous humor for its protein content and the enumeration of its cells. The presence of numerous cells indicates that inflammation of the uveal tract is still active, particularly if these cells are lymphocytes or even polymorphonuclear leukocytes. Dr. Amsler correctly states that, if perforating keratoplasties were always preceded by a careful study of the aqueous humor, they would present fewer disagreeable surprises for the surgeon, such as postoperative inflammations and secondary glaucoma. He also points out that keratography is useful for the study of asymmetrical and irregular curvatures of the cornea; it reveals the form that the graft takes once it is incorporated into the recipient cornea. Keratography offers an objective standard paralleling the subjective criterion of the visual acuity with the final operative result.

Under Methods of Preserving Tissue, Buschke (1951) states, "Since the stromal cells of the graft have to be alive at the time of its transplantation, storage methods entailing chemical preservation, freeze-drying, or quick-freezing in the absence of glycerol, merit no further consideration, since cells are known not to survive these treatments." The chapter on special instruments, corneal markers, and splints gives special attention to instruments used in Europe. Dr. Rycroft presents exhaustive reports on corneal grafts, as contained in the chapters by outstanding European pioneers, and has supplemented them with his own results and the reports of outstanding American ophthalmologists. The book is readable and amply illustrated. It should be in the library of any ophthalmologist who wants to keep up with what is happening in this field in Europe.

Currents in Biochemical Research 1956. Edited by David E. Green. Twenty-seven essays charting present course of biochemical research and considering intimate relationship of biochemistry to medicine, physiology, and biology. Cloth. $10. Pp. 697, with illustrations. Interscience Publishers, Inc., 250 Fifth Ave., New York 1; 88-90 Chancery Lane, London, W.C.2, England, 1956.

This volume records some of the work done by 32 authors in many important fields in biochemical research. The intent of the book, as stated by Dr. Green in the preface, was to give an over-all picture of the present status of significant problems in a particular field, to point out the present broad strategy used in attacking these problems, and then to speculate as to the paths most likely to be followed in future research. Much of the progress made on the many problems in biochemistry has been due to the development of new techniques in the isolation,

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

identification, and further characterization of biochemical substances. Such techniques include paper chromatography, spectrophotometry, electrophoresis, and the use of isotopes. In reading the various chapters, one is immediately impressed with the tremendous advances that have been made since the first volume was written 10 years ago. A glance at the titles of these essays suggests the vast amount of work that has been done in various phases of the enzyme study. A thorough reading of the book reveals even more the many related fields into which the study of enzymes has spread. At least eight of the essays are concerned directly with various general espects of enzyme chemistry, and most of the others devote a major portion of their material to more specific enzymes or enzyme systems. Included are such general topics as enzyme kinetics, enzyme complexes, induced enzyme formation, enzymes as reagents, enzymes in electron transfer, special problems in multiple enzyme systems, and the relationship between enzymes, coenzymes, nucleotides, and prosthetic groups.

Other relatively specific topics include a discussion on certain biochemical aspects of virus growth, bacterial fermentation, vitamin and growth factors, hormones, ribonucleic acids, porphyrin biosynthesis, sugar interconversion in nature, muscular and nerve activity, blood functions, and carcinogenesis. Subjects of a more general nature that are covered include problems of cellular biochemistry, biochemical problems in disease, chemical structure, and biochemical questions. Essays on various general aspects of protein structure and on the structure of insulin are also included. Each of the essays includes a bibliography. As shown by the varied subject matter presented, the field of biochemistry is broad and complex. It borders on genetics, cytology, physiology, and theroretical chemistry. Much of the material should be of interest to physicians.

Cytology of the Blood and Blood-Forming Organs. By Marcel Bessis, Director of Research Laboratory, Centre national de transfusion sanguine, Paris, France. Translated by Eric Ponder. Cloth. $22. Pp. 629, with 405 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England, 1956.

Since its inception, morphology has been the cornerstone of hematology, and hematology, which was once a rather drab subject, has expanded into physiopathology, immunology, and chemistry. Despite this, the cell has retained its preeminence due largely to the development of neomorphology. At one time, morphological studies were represented simply by the use of blood and bone marrow smears stained with one of the Romanowsky stains. In recent years, phase microscopy has allowed the observation of unstained material in the cell that is unseen with staining techniques. All manner of cytochemical methods have been developed for studying specific enzymes and other chemical materials in the cell. The motion picture technique, particularly with the use of time lapse has been developed to a high degree for the study of the actual life and death of a cell. Finally, electron microscopy has opened the door to the observation of materials within the cell consisting of only a few molecules. In all of these advances the author has pioneered, and, in fact, he has created in this book a new framework of morphological hematology. His remarkable phase microscopy pictures, his extraordinary electron microscopy, and his research with the aid of motion pictures have become well known to hematologists, particularly those with a knowledge of French. This book should serve to introduce his work to many English-speaking readers. Eric Ponder has done a fine job of translation. Dominating the book are the extraordinary electron and phase contrast photomicrographs of blood cells, which give a new dimension and insight into minute cellular structures. This English translation is an excellent reproduction of the original French treatise published in 1954; in addition, in many areas the text is greatly expanded, particularly in the fields of platelets, megakaryocytes, and electron microscopy. Orthodox morphology is by no means neglected, but neomorphology is here in full force and beauty. The book is excellently printed, the type is legible, and the photomicrographs are superb. Despite its high price, the book is a necessity for all those who work in the field of hematology.

Progress in Clinical Obstetrics and Gynaecology. By T. L. T. Lewis, M.B., B. Chir., F.R.C.S., Obstetric Surgeon, Guy's Hospital, London, England. Cloth. $12. Pp. 594, with 90 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6; J. & A. Churchill, Ltd., 104 Gloucester Pl., Portman Sq., London, W.1, England, 1956.

This book is designed to put in concise form the present knowledge of various conditions in the field of obstetrics and gynecology. Each chapter considers one problem. With such broad coverage, it is inevitable that the subjects are discussed in a condensed fashion. The author emphasizes things of practical significance at the expense of more basic studies of equal importance. He has also chosen to build up the data behind what are apparently his own conclusions. The British viewpoints and work are stressed, which makes it surprising to find, for example, such incomplete reports as those dealing with the anemias of pregnancy. The discussions of some of the malignant diseases are so condensed as to be grossly incomplete. There are some references at the end of each chapter; but these give altogether too much stress to the British literature, which in itself is incomplete, and almost none to the non-English-language literature. There is no reference to any studies by the author himself. The book does not, then, carry the authority of a reference book but is designed as a superficial but quick source of practical information for postgraduate teaching rather than as a book for graduate study. It is not an adequate source, as the author admits, for the specialist. It is well printed, with few typographical errors, on glossy paper. There is a moderate number of illustrations. The language is clear and concise. There is a good index. The book is recommended for the general practitioner doing work in obstetrics and gynecology, for the intern, and for those who need to understand the British approach to these practical problems. Subsequent volumes should limit the number of subjects to be considered and discuss them in greater detail.

The Premarital Consultation: A Manual for Physicians. By Abraham Stone, M.D., Associate Clinical Professor of Preventive Medicine, New York University College of Medicine, and Lena Levine, M.D., Associate Medical Director, Margaret Sanger Research Bureau, New York. Cloth. $3. Pp. 90, with 11 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England, 1956.

As is stated in the introduction to this book, premarital counseling is an extension of preventive medicine in the family unit. That it is important would seem to be an indisputable fact, yet, unfortunately, far too many physicians tend to shrug it off as something that has nothing to do with medicine. Inquirers are referred to psychologists or marriage counseling agencies that, even though admittedly providing excellent services, still cannot give the all-inclusive guidance the physician can and should offer. As the authors point out, this type of assistance is not beyond the scope of the general practitioner, despite the tendency to assign it to various specialty fields. After instructions on taking a premarital history and making necessary examinations are given in the manual, there is a chapter, which gives extensive guidance, dealing with interview of the couple. Interspersed throughout this chapter are questions and answers exchanged by the three participants. Information is provided on sexual adjustment, family planning and contraceptive methods, social and emotional factors in marriage, and the physiology of sex. This is followed by a brief and simplified discussion of genetics, with specific consideration of mental defects, epilepsy, and other rather common conditions. Especially helpful are sections in the appendix dealing with use of the vaginal diaphragm, marriage laws of the states, and birth control laws. This volume should be of interest and assistance to many physicians.

Accidental Poisoning in Childhood: A Reference-Guide to the Chemical Constituents of Common Household Substances, Together with Treatment Recommendations for Their Accidental Ingestion by Children. Prepared by Committee on Accident Prevention, American Academy of Pediatrics, and written by Edward Press, M.D., M.P.H., Field Director, American Public Health Association. Cloth. $3. Pp. 131. American Academy of Pediatrics, 1801 Hinman Ave., Evanston, Ill.; published by Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

In 1950, the American Academy of Pediatrics took official notice of the problems and hazards of poisoning by appointing a committee on accident prevention. Dr. Edward Press, working through this committee has now compiled a summary of the literature on the constitution of various household chemicals and methods of treatment. This booklet is divided into three main sections: Treatment Procedures, List of Toxic Substances and

Suggested Treatment, and Toxic Constituents of Household Products. For quick reference, these three sections have been set off from one another by pages of a different color. Since this booklet was compiled primarily to aid in treating children who have accidentally ingested household poisons, much of the recommended treatment is broken down into dosages for infants and young children. The author has also pointed out that the suggestions given are only a guide and "must not be used mechanically or one will slip into sloppy and ineffective 'slide-rule' medicine." Since it is almost physically impossible to include up-to-date information on the ingredients of all household products, the author has chosen to include a number of representative items. He has, however, included a list of references that may be consulted for additional information. Despite the fact that the scope of the book is limited to household poisons, its clarity of style and ease of reference provide an excellent guide for the physician who is called on to treat all types of accidental poisoning in children.

Surgery for General Practice. By Victor Richards, M.D., Professor of Surgery, Chairman of Department of Surgery, Stanford University School of Medicine, San Francisco, California. Cloth. $17.50. Pp. 947, with 476 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1956.

This textbook is a unique contribution. The author drew on his associates working in specialized fields in the same clinic, and the experiences cover a span of many years. The concept of treating the total patient rather than a diseased segment of his body is continually emphasized. The subjects discussed include local anesthesia, hemorrhage, shock, injury, surgical infection and chemotherapy, anticoagulants, burns, plastic surgery, tumors, surgical disorders of all parts of the body, hypertension, intractable pain, peripheral nerve surgery, and fractures. The limits of a textbook for general practitioners are difficult to define with accuracy. The underlying philosophy of the author in emphasizing the obligation to treat the whole patient is commendable. One may envision a simple problem initially, but it may rapidly become complicated. The author, therefore, has encompassed in this book methods of surgical treatment that will conduct patients safely through problems of changing complexity. The author has intentionally omitted a bibliography. This is not a book of operative techniques but one emphasizing the principles of surgery for the average physician. The tables, diagrams, and line drawings are effectively placed, precise, clear, and unusually illuminating. This book should be found high on the roster of timely and outstanding contributions. Every physician should have the fundamental surgical knowledge it presents.

Urology. By B. G. Clarke, M.S., M.D., F.A.C.S., Associate Professor of Urology, Tufts University School of Medicine, Boston, and Louis R. M. Del Guercio, M.D., Assistant Resident Surgeon, St. Vincent's Hospital, New York. Cloth. $6.50. Pp. 245, with 163 illustrations. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C. 4, England, 1956.

This book is intended to give a brief presentation of the subject matter of special urologic interest to the undergraduate student and the general practitioner. It has a well-arranged short essential text complemented by a sufficient number of line drawings, diagrams, and pictures to partially replace lengthy detailed descriptions. As the authors remark, "For the leisurely reader, this material amplifies the text in much the same way as a series of short clinics on the commoner urogenital diseases." A selected list of references is provided with each chapter. Of the many textbooks on urology published in the past few years, this one is most suitable for the classroom work of the undergraduate student. There are some apparent omissions. Pneumaturia in a person with diabetes or pneumaturia associated with an enterovesical fistula is not mentioned. The discussion on the differential diagnosis of bladder tumors does not mention the necessity for recognizing irradiation granulomas, inflammatory areas, surrounding enterovesical fistulas, foreign bodies, or areas of encrusted cystitis. The importance of diabetes as a cause of renal papillary necrosis and persistent urinary infection is omitted. The character of the book suggests that the experience of the authors has been largely one of hospital care, with a paucity of reference to the more common genitourinary conditions that are seen in routine office practice.

Rosenau Preventive Medicine and Public Health. By Kenneth F. Maxcy, M.D., Dr.P.H. With 27 contributing authors. Eighth edition. Cloth. $15. Pp. 1465, with illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1956.

This second revision of Rosenau's widely used textbook to be compiled by Dr. Maxcy appears five years after the previous edition. In that time Dr. Maxcy has retired from his chair in epidemiology. The words "public health" have replaced "hygiene" in the title. This was done to give better indication of the scope and purpose of the book, which remain unchanged. There has been no change in the list of contributors. The author states that about 44% of the text has been revised to bring it up-to-date. The length of the text has not been increased, but a more adequate index has been provided. The addition of such subjects as Coxsackie virus and adenovirus infections, epidemic nephritis, and West Nile encephalitis without increasing the size of the book has been accomplished by condensing some of the older material, omitting some of the graphs and tables, and in a few pages setting the lines closer together. The revision of the sections on tuberculosis and ionizing radiations was especially well done, and the latter is a matter of increasing interest. This book continues to be the outstanding work in its field. It contains much information that should be of value to the general practitioner and is an indispensable item in the library of the public health specialist.

The Morphology of Human Blood Cells. By L. W. Diggs, M.A., M.D., Professor of Medicine and Director of Medical Laboratories, University of Tennessee and City of Memphis Hospitals, Memphis; Dorothy Sturm, Instructor, Memphis Academy of Arts; and Ann Bell, B.A., Instructor in Medicine, University of Tennessee. Cloth, loose-leaf. $12. Pp. 181, with 54 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1956.

This textbook, presented in atlas form, approaches the study of blood cells from the developmental and structual point of view rather than from that of the specific disease entity. The authors are to be commended on this emphasis, for a sound knowledge of the basic difference between normal and pathological cells is of great clinical value. The illustrations, in a separate section for easy reference, are of exceptional quality and are well integrated with the accompanying text. The use of commonly applied synonyms in addition to the standard terminology sponsored by the American Society of Clinical Pathologists and the American Medical Association, and the indexing of all terms, adds to the value of this reference book. The section on techniques and methods provides a useful review of these procedures, rather than a basic set of instructions, and describes some of the less common but occasionally needed stains. More could have been included on bone-marrow procedures. While the authors have prepared the book primarily for medical students and student technologists learning about blood cells for the first time, the text, perhaps due to its brevity, appears to require a substantial histological background. The book should be of value to the practicing physician who makes his own examination of blood smears.

The Recovery Room: Immediate Postoperative Management. By Max S. Sadove, M.D., Professor of Surgery (Anesth.) and Head, Division of Anesthesiology, University of Illinois College of Medicine and Research and Educational Hospitals, and James H. Cross, M.D., Clinical Assistant Professor in Surgery, University of Illinois College of Medicine, Chicago. With contributions by 24 authorities. Cloth. $12. Pp. 597, with illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1956.

Twenty-six persons have contributed to this book. They have attempted to discuss in great detail the postoperative management of patients in their institutions who have undergone various procedures. The most extensive chapter deals with the management of circulation, shock, respiration, and nutrition. This book should be of value to an institution that desires to set up a recovery room, and it should be useful as a means of evaluating a recovery room already in existence. Moreover, the book should be instructive to surgeons who do not have the facilities described but who might wish to use some of the measures advocated in the postoperative care of patients. The book is well indexed, is printed on excellent paper, and is illustrated extensively. The sources of some of the illustrations are not adequately indicated by the authors.

QUERIES AND MINOR NOTES

SIDE-EFFECTS OF STEROID THERAPY IN CHILDREN

To the Editor:—*What undesirable side-effects have been reported from the use of steroid therapy (corticotropin, cortisone, prednisone) in the treatment of children over a short period of time and in long-range therapy? There appears to be considerable apprehension in the use of the steroids in growing children.* *George L. Popkin, M.D., Rockville Centre, N.Y.*

Answer.—The undesirable side-effects of pharmacological courses of steroid therapy in children over a short period of time are largely those concerned with potassium deficiency and salt retention, with resulting edema. When administered over long periods of time, steroids may reduce the individual's resistance to infection by inhibiting antibody formation and by increasing the dissemination of bacteria or viruses through the tissues to such an extent that he is made more vulnerable and fails to show any clinical evidence of response. For these reasons it is thought fatal cases of chickenpox (varicella) occur in children who are receiving this form of therapy. Again, steroid therapy may change the clinical picture of chickenpox to such an extent that diagnosis is difficult, i. e., by altering the appearance of the dermatological manifestations, or it may permit the rash to continue to occur in characteristic "creps" over a period of four to five weeks.

Untoward effects have also been reported among children with pulmonary tuberculosis, and there is a steadily increasing feeling that herpes zoster and ophthalmia are aggravated by either oral or local use of steroids. The administration of cortisone to hamsters and monkeys prior to infection with the virus of poliomyelitis changes nonparalytic to paralytic poliomyelitis. Prolonged steroid therapy may so usurp the function of the adrenal glands that they may not resume their normal activity when the agent is withdrawn for an indefinite period. Thus, corticotropin may logically be used at the end of prolonged steroid therapy, with gradually decreasing doses. To these effects must be added the "moon face," obesity, and pigmentation of adrenal cortical hyperfunction (Cushing syndrome).

SUDDEN DEATH

To the Editor:—*I was consulted by the coroner concerning the death of a woman who allegedly had been hit in the abdomen by the blunt side of an ax. Death was almost instantaneous. Autopsy revealed no marks on the body, and the findings were negative except for those of acute alcoholism. Is it possible that cardiac arrest could have been instituted by a severe blow over the solar plexus without leaving any telltale marks on the body?* *M.D., North Carolina.*

Answer.—Many cases are on record of acute fatal circulatory failure after injuries that would not ordinarily be regarded as dangerous. Thus, a blunt impact over the solar plexus, precordium, or a testis, pressure on the carotid sinus, or sudden dilatation of the rectum may be immediately fatal. Postmortem examination in such circumstances may disclose no gross or microscopic evidence of trauma. The mechanism responsible for such a death may be vagocardiac inhibition or reflex systemic vasodilatation.

In evaluating such a situation, it should be borne in mind that a person may die unexpectedly and suddenly from natural causes without any postmortem evidence as to the nature of the fatal disease. Thus, a sudden death should not be attributed to cardiac arrest or to reflex vasodilatation due to a blunt impact unless (1) the occurrence of the impact was well documented and (2) a complete postmortem pathological and toxicologic examination failed to disclose the cause of death.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

HYPOCALCEMIA IN INFANTS

To the Editor:—*I would appreciate information regarding hypocalcemia with laryngospasm in newborn infants, with particular reference to the incidence between breast-fed and formula-fed babies. Is a commercially prepared formula more prone to giving rise to this condition?* *Boyd C. Hindall, M.D., Lake Geneva, Wis.*

Answer.—Laryngospasm is one symptom of hypocalcemia. It is usually accompanied by other signs of tetany, such as carpopedal spasm. It must be differentiated from laryngeal stridor and trauma due to too energetic aspiration of the pharynx in newborn infants. Tetany usually occurs in formula-fed babies and rarely in breast-fed infants. Breast milk has a calcium phosphorus ratio of about 2:1, while cows milk has about a 1:1 ratio. This high phosphorus ratio, combined with hypofunction or immaturity of the parathyroids, seems to be the cause of tetany of newborn infants. There is usually a low serum calcium level, below 6.5 to 7 mg. per 100 cc., and a high phosphorus level of over 6 mg. per 100 cc. Some commercial formulas are usually made from cows' milk, with a calcium-phosphorus ratio of about 1:1. It is recommended, when cows' milk is used as a prophylaxis against hypocalcemia or tetany in infants, that it be diluted 1:2 or 1:3 with water.

MENSTRUAL HEADACHES

To the Editor:—*A 32-year-old woman has had occasional mild to moderate headaches associated with her menses for several years. For the past couple of years these headaches have been occurring with increased frequency and increased intensity just prior to and/or during the menses. Powerful analgesics have given but slight relief. Are any other measures of value to help relieve this incapacitating symptom?* *M.D., Georgia.*

Answer.—Some women with a similar complaint have been greatly helped by the administration of ammonium chloride. The patient should be asked to refrain from adding table salt to her food during the two weeks before the onset of the menstrual bleeding. During this time she should take 0.6 gm. of ammonium chloride three times a day. Another simple and effective agent is testosterone propionate. The patient may be given 25 mg. hypodermically on the 10th and the 3rd day before the expected menstruation, or, better still, she can take a 10-mg. tablet of methyltestosterone, or a 5-mg. tablet, sublingually or buccally, daily for 10 days before the expected onset of menstrual flow.

RIDGE OVER FOREHEAD OF YOUNG BOY

To the Editor:—*A boy, now 2 years old, has a disfiguring ridge over the frontal or metopic suture. This is associated and continuous, with a vertical white line over the middle of his nose. Several local pediatricians say it will disappear. However, this deformity, far from disappearing, has, I believe, become more prominent. His head appears to be abnormally long and narrow. This boy is a premature child. Is there anything that can be done to remove this deformity?* *M.D., Canada.*

Answer.—In the absence of further history and physical findings, especially developmental data, neurological findings, and the skull measurements, it is assumed for the purpose of this reply that such findings are normal. The long and narrow shape of the head is not unusual for a child of premature birth. Indeed, some clinicians feel they can frequently detect such children even in the school-age group. This head shape may persist or may eventually become less conspicuous, actually or relatively, as further head and body growth takes place. An osseous ridge palpable or visible over the metopic suture is also not uncommon in premature or full-term infants. When it occurs, it is more apparent in children with narrow heads. The ridge usually be-

comes less conspicuous in later years, since it is uncommon among older children and adults. A palpable ridge over the metopic and sagittal sutures in the presence of a long and narrow head might make one suspicious of craniostenosis of these sutures. An x-ray of the skull will rule out this possibility. Neurological findings may not be present until the child is 2 years of age or older. The vertical white line over the midline of the nose has been seen in some children. Its cause and significance are obscure. In the absence of pathological findings, therapy is not warranted for the bony ridge or the white line in the early years of the child's life. The proportionate differences in growth in the early years makes the head deformity more conspicuous, and in most instances it can be expected to become less apparent.

IDENTIFICATION OF THE BLIND

To the Editor:—*Please discuss conditions under which a blind person is identified in the United States. In Germany, a special band is worn on the left arm. In France and Belgium, a blind person is identified by a white cane. In Europe, conditions under which these marks of identification are distributed are the same everywhere: a person must have less than 10% of normal vision to be identified as blind. What are the conditions in the United States under which canes are distributed?*

Daniel M. Rolett, M.D., New York.

Answer.—There is no distinguishing mark by which blind persons are identified in the United States. In fact, there is a definite wish on the part of many blind persons to avoid being conspicuous, quite contrary to the desire of blind beggars who wear dark glasses in order to attract attention and obtain pity for their handicap. All states do have laws restricting the use of white canes to blind persons and, in general, giving blind persons certain rights of way in crossing streets and roads. These laws differ somewhat, and it is recommended that details be obtained by physicians from their own state or local agency for the blind.

DATING OF SEMINAL STAINS

To the Editor:—*Can the stains produced by dried semen be dated?* *M.D., Alabama.*

Answer.—Dried stains produced by semen cannot be dated with any degree of accuracy. If seminal ejaculate is dried rapidly on a reasonably clean surface, the spermatozoa may remain intact, the antigenic properties of the fluid may persist, and its acid phosphatase may resist deterioration for many months. Thus, excellent preservation of cellular, immunologic, and chemical characteristics of the fluid does not necessarily indicate that the stain is recent, nor does their deterioration necessarily indicate that the stain is old.

HOSPITALIZATION FOR OVERWEIGHT

To the Editor:—*A recent article in the* New Jersey Medical Journal *states that patients more than 50 lb. (22.7 kg.) over their recommended weight who have failed to reduce on ambulatory treatment should be hospitalized for one to two weeks for good preventive medicine. Despite much additional authoritative evidence in the literature that confirms the value of this, some members of our hospital staff feel that a busy hospital should not waste bed space for such a condition; other members feel that encouraging hospitalization for such obese patients will actually save bed space by lessening the frequency of heart disease and other complications of obesity. We would appreciate an opinion.*

Leonard Casser, M.D., Cresskill, N. J.

Answer.—It is not possible to offer a categorical answer to this question, because of the variables involved in the persistence of overweight. The question as to whether a patient who remains overweight on ambulatory treatment should or should not be hospitalized can only be determined on the basis of the patient and not on the basis of a given amount of overweight per se. Overweight individuals adhering meticulously to a carefully planned and fully observed dietary regimen will lose weight unless there is an underlying metabolic or endocrine abnormality, emotional disorder, cardiovascular or renal problem, or deficiency disease. The persistence of overweight where an adequate reducing regimen has been outlined and strictly adhered to always merits further study to rule out functional or organic factors that may have been overlooked. Whether this should be through further study in the physician's office or through the medium of a period of hospitalization for additional diagnostic study and therapeutic supervision is a matter that can be determined solely on what seem to be the inherent needs in any given situation.

COIN LESIONS SHOWN IN CHEST FILMS

To the Editor:—*A routine chest film of a 60-year-old patient showed a coin lesion in the middle lobe of the right lung. There was no history of illness or undue exposure to tuberculosis. The Mantoux test was positive. All other laboratory work, including Papanicolaou's stain of sputum, was negative. All cultures and guinea pig tests were negative. Resection was done. The pathologist reported a "well encapsulated, calcerous mass measuring 1 cm. in diameter. The lining of cavity is granular. Section shows well demarcated tubercle surrounded by epitheloid lymphocytes and Langerhans' cells." The diagnosis was pulmonary tuberculosis. Cultures from the resected specimen were negative for acid-fast bacilli. No organisms were demonstrated. Is a diagnosis of tuberculosis justified in this patient? If not, what etiological agents could produce such a lesion?* *M.D., Louisiana.*

Answer.—In this case the finding of "a well demarcated tubercle surrounded by epitheloid lymphocytes and Langerhans' cells" seems to justify a diagnosis of tuberculosis. On the other hand, that the tuberculosis is open and clinical seems problematical. This probably should be classified as closed, healed tuberculosis, and the patient should be considered well after removal of the lesion. It might be well to keep him on therapy with antituberculosis drugs for a number of months, as a precautionary measure. A good many of the coin lesions with calcification in them have been found to be caused by histoplasmosis, and differentiation between a nodule of this kind caused by tuberculosis and one caused by histoplasmosis is difficult. In the pathology department with which this consultant is familiar, these nodules are all called "granulomas" and are not said to be caused by either tuberculosis or histoplasmosis unless the sections show tubercle bacilli or the histoplasmosis organism.

VITAMIN A AND LOSS OF HAIR

To the Editor:—*Is there any evidence that taking large doses of vitamin A makes the hair fall out from the scalp, as stated in a syndicated newspaper article? If so, what is the dose of vitamin A that can be prescribed safely when such therapy is indicated?* *M.D., Connecticut.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—Diffuse alopecia is sometimes associated with other frank signs of chronic or subacute hypervitaminosis A, such as hepatomegaly, fissuring of the corners of the mouth, and thickening and tenderness of the bone cortex in certain areas. Large doses of vitamin A (e. g., 5,000 to 50,000 I. U. daily) can be administered with safety for a week or 10 days in patients with signs of frank or latent deficiency. For ordinary prophylaxis, daily dosages should be limited to 3,000 I. U.

Answer.—The question regarding hypervitaminosis A and hair loss has a timely answer in a report by Elliott and Dryer in The Journal (161:1157 [July 21] 1956), where a case of hypervitaminosis A in an adult is reported. No hair loss was noted in this patient who received vitamin A in a dosage of 50,000 units three times a day for over seven months. This report also refers to other cases of hypervitaminosis A described in the literature where hair loss was noted along with symptoms referable to the bones and joints, notably bone tenderness, and skin changes. The dosage level of vitamin A that produces symptoms of hypervitaminosis A undoubtedly remains quite variable because of numerous factors subject to considerable biological variability.

MAINTAINING TISSUE TONE WHILE REDUCING

To the Editor:—*Would general body massage, done by a trained physiotherapist, be useful to maintain good tissue tonus in a patient who has been hospitalized to reduce his overweight of 50 lb. (22.7 kg.)? He has not yet developed signs or symptoms of additional disease. Are there any other benefits to "general body massage?" How often would it be recommended?* *Leonard Casser, M.D., Cresskill, N. J.*

Answer.—Opinion varies as to the extent of usefulness of massage in maintaining "tissue tonus" in a patient who has lost weight. Depending on the method of application and type of massage used, the psychic effect can be either a stimulative one or a sedative one. Blood flow to and from and lymph return from an area may be increased by the use of massage, and, secondary to this, a mild increase in metabolic activity may result. It is doubtful that massage alone can be expected to produce the desired effect in the patient who has lost weight. Probably more effective in bringing about this desired result would be the use of such active exercise as the patient's physical limitations permit. The benefits derived from carefully prescribed and graduated activity will undoubtedly exceed any of those derived from general body massage given every other day.

REMOVAL OF FLUORIDES FROM WATER

To the Editor:—*Will a water softener remove the fluoride compound such as is being used by the city of Chicago in their fluoridation program?* *John B. Jacobs, M.D., Chicago.*

Answer.—The ordinary household type of water softeners will not remove fluoride compounds from water. The commercial type of water softener known as a demineralizer will remove a major portion of the fluoride compounds added to water in fluoridation programs. These demineralizers will remove fluoride compounds so long as they are ionizable. Should a small amount of fluoride combine with organic (unionizable) compounds, these will not be removed.

ARTERIOSCLEROSIS AND DIET

To the Editor:—*A patient who eats cottage cheese twice daily rarely eats meat or fish. Would this be a good diet for one who has angina pectoris or arteriosclerotic heart disease? In other words does this kind of cheese produce too much cholesterol for such a patient? He adds moderate amounts of cream to the cheese.* *M.D., Indiana.*

Answer.—The diet outlined above is certainly not a desirable diet for a patient with atherosclerotic heart disease for several reasons. 1. It is necessarily too high in fats (including cholesterol and saturated fats). 2. Cottage cheese being the main source of protein, it is probably lacking some of the essential amino acids, vitamins, and minerals. This constitutes a dietary imbalance that, according to modern concepts regarding the pathogenesis of atherosclerosis, probably has deleterious effect on the vascular tree, particularly the coronary arteries. The patient should be advised to modify his dietary habits by substituting lean meats for at least part of his cottage cheese–cream intake. In general, a well-balanced diet deriving not more than 25 to 30% of the daily calories from fats and containing liberal amounts of fresh and cooked vegetables and whole grain products, is considered as optimal at present.

LACTATION IN INFANCY

To the Editor:—*A 10-month-old girl has milk in one breast. A small amount can be expressed on pressure. What, if anything, should be done? Is it likely to go away of itself?*

M.D., Virginia.

Answer.—The presence of a small amount of thin milky secretion in the breast of an otherwise normal 10-month-old female infant has no significance. Spurious lactation in infancy is considered to result from stimulation of the breasts by maternal hormones that pass through the placenta to the infant during fetal life. The condition requires no treatment and can be expected to clear spontaneously if the breast is not irritated by tight clothing or manipulation.

BATHING NEWBORN INFANTS

To the Editor:—*Please review the current trend of thinking concerning the bathing of newborn infants with a mild soap and water as opposed to a method of oiling them with one of the acceptable baby oils. Various sources indicate that most of the larger obstetric hospitals have completely abandoned the use of oils.*

James M. Covington Jr., M.D., Wadesboro, N. C.

Answer.—Neither method is satisfactory. The current thought is best expressed by the Standards and Recommendations for Hospital Care of Newborn Infants (American Academy of Pediatrics, 610 Church St., Evanston, Ill., 1954), section 7, page 34: "No water or oil bath should be given during the hospital stay"; page 81: "Blood should be removed with cotton and water. Only unsightly amounts of vernix caseosa are to be removed. This should be done with sterile cotton. The skin thereafter should be left alone. Buttocks are to be cleaned with warm tap water with as little rubbing as possible. If needed, oil may be used over the diaper area."

RECURRENT BILIARY COLIC

To the Editor:—*A 50-year-old woman with a typical clinical history of recurrent biliary colic showed on three different occasions a nonfilling gallbladder on Graham-Cole series. There is no history of jaundice. At operation the gallbladder and biliary tree appear normal to visualization and palpation. The pancreas is apparently normal to palpation. What, if any, procedures should be performed at the operating table?*

M.D., New York.

Answer.—In the absence of objective evidence of disease of the gallbladder at operation, cholecystectomy or cholecystostomy should not be done. Careful exploration of the abdomen should be made to exclude the possibility of chronic disease elsewhere. The results after removal of a gallbladder that appears normal have not been good in a large proportion of patients. A high incidence of biliary dyskinesia has been encountered. If symptoms persist after recovery from the operation, it might be wise to place the patient on a low-residue, nonlaxative diet and to administer belladonna and phenobarbital. In many patients hypermotility of the colon rather than disease of the gallbladder is responsible for these symptoms.

PULLING TEETH DURING POLIOMYELITIS SEASON

To the Editor:—*The following quotation from the* Newsletter of the Medical Society of the State of New York *may be of interest in connection with the Query and Minor Note on "Pulling Teeth During Poliomyelitis Season" in* The Journal, *Sept. 29, 1956, page 527. "The State Health Department's recommendation that poliomyelitis vaccination continue during the summer does not apply to elective injections of other than polio vaccine. Probably a person who has received two or three injections of poliomyelitis vaccine faces little risk of getting paralytic polio even if the elective procedures are carried out in an area where the disease is prevalent. However, since the number of persons who have completed the course of three injections is still relatively small, the Department feels that the wisest course for this summer is to recommend postponement both of such elective injections and of elective nose, throat and mouth operations, especially in areas where polio is prevalent. Drs. Jonas Salk and David Bodian, with whom we have discussed the question, are in accord with this policy. As in the past, the avoidance of immunizations in infants under six months of age is not recommended since the hazard of polio is far less in this age group than the hazard of the other diseases against which infants are routinely immunized."*

Theodor Blum, D.D.S., M.D.
Secretary, the New York Institute of Clinical Oral Pathology, Inc.
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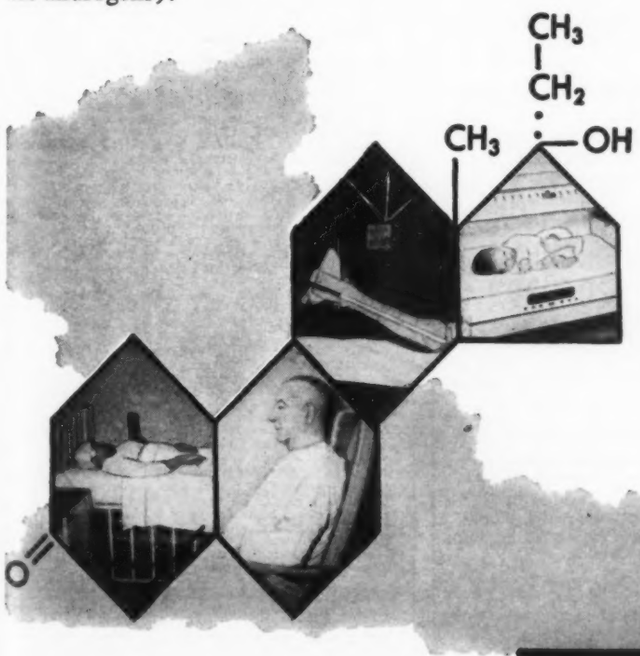

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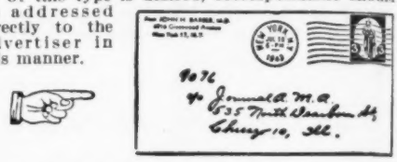

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POSITIONS — 3600 BED HOSPITAL; DYNAMIC treatment program; active teaching setting; opportunities for research and individual psychoanalysis; assistant clinical director; requirements: eligibility for state license, Board certification in psychiatry; range $10,800-$13,900; clinical psychiatrist, requirements: eligibility for state license, Board certification in psychiatry; range $10,200-$13,200 or with Board equivalent training but without certification; range $9180-$11,280; pension, social security and insurance. Apply: Superintendent, New Jersey State Hospital, Trenton. C

ASSOCIATE WANTED — FOR WELL INTEGRATED general practice in western Massachusetts town, population 50,000, within short distance from hospitals, commercial and cultural facilities; prefer older physician who can share pleasant, profitable and varied work; thus keep advancing as a scientist and enjoy living as well; office building houses well-stocked medical library, X-ray, EKG and clinical laboratory. Box 2297 C, % AMA.

PHYSICIAN WANTED — EYE, EAR, NOSE AND throat specialist to fill vacancy in charming upper New York State village on Skaneateles Lake, which is known as "The most beautiful body of water in the world."; magnificent home available complete with office setup in perfect downtown location overlooking the lake; established practice. For details write: J. Frank Havemeyer, Realtor, Skaneateles, New York. C

ORTHOPEDIC SURGEON—CERTIFIED OR ELIGIBLE: by outlying clinic in Mid-West metropolitan area; our point system makes hard work rewarding but not necessary; early partnership without investment; advanced plans for new suburban bldg; will guarantee minimum net of $18,000 the 1st year, $20,000 the 2nd; extra rewards for teaching, etc.; only superior men considered. Box 2285 C, % AMA.

(Continued on page 93)

Ointment should be applied to the affected eye every two hours or oftener as the condition and response indicate.

you can control common eye infections with ACHROMYCIN Ophthalmic

HYDROCHLORIDE
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With ACHROMYCIN* Tetracycline Ophthalmic dosage forms in your office, you can initiate therapy in practically all ordinary eye infections, including most types of conjunctivitis. On your prescription, the patient can readily secure ointment or solution to continue treatment at home. Mild infections often respond within 48 hours; stubborn or severe infections may require longer treatment, sometimes supplemented by oral administration of ACHROMYCIN. The ointment also serves as an excellent prophylactic following the removal of foreign bodies from the eye.

In using or prescribing any of the 21 ACHROMYCIN dosage forms you can feel confident in your choice. This true broad-spectrum antibiotic has proved effective against a wide variety of disease organisms. It is rapidly absorbed, quickly achieves high blood levels, and provides prompt control of infection with minimal side effects. Furthermore, every gram is made in Lederle's own laboratories and offered *only* under the Lederle label—your assurance of quality.

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Use nonburning ACHROMYCIN Ointment (3%) for treating wounds and abrasions, and after simple surgery. Bland, soothing, permits normal healing. Tubes of ½ and 1 oz.

Kids go for the candy-like cherry flavor of ACHROMYCIN Syrup. Prescribe it with confidence that it will be taken without fuss. Potency: 125 mg. per teaspoonful (5 cc.).

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TONICS AND SEDATIVES

♣

my favorite story

In this space will be published anecdotes submitted by physicians concerning their practice or people in general. Contributions for "My Favorite Story" are welcome.

♣

The young lady swished into the party with a mink coat draped casually over her arm.

"Honey," cried her bosom enemy, "how did you ever get such a lovely mink? Why, I've been struggling for years to get one."

"Darling," replied the mink-coat owner, "you mustn't struggle, ever."

♣

the poetry corner

A girl who wears a cotton stocking
Never need give her door a locking.
A girl who chooses other makes,
Gets all the runs and all the breaks.

♣

The face that over cocktails seems so sweet
May be less alluring over shredded wheat.

♣

more bloopers

The history of radio and television is replete with boners that are always good for a chuckle. Here are some of the gems.

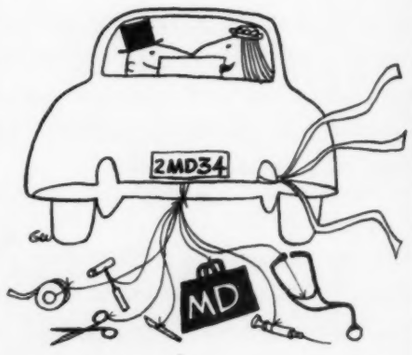
♣

"The doctor remained under the farmhouse roof all night to pull the babies through."

♣

"Search is now being made for two girls who escaped from an Aurora cemetary."

♣



♣

"Anyone who has listened to me has had occasion to use aspirin."

♣

"Borden's brings you the world's best cheese. Tonight we present some of Hollywood's outstanding stars."

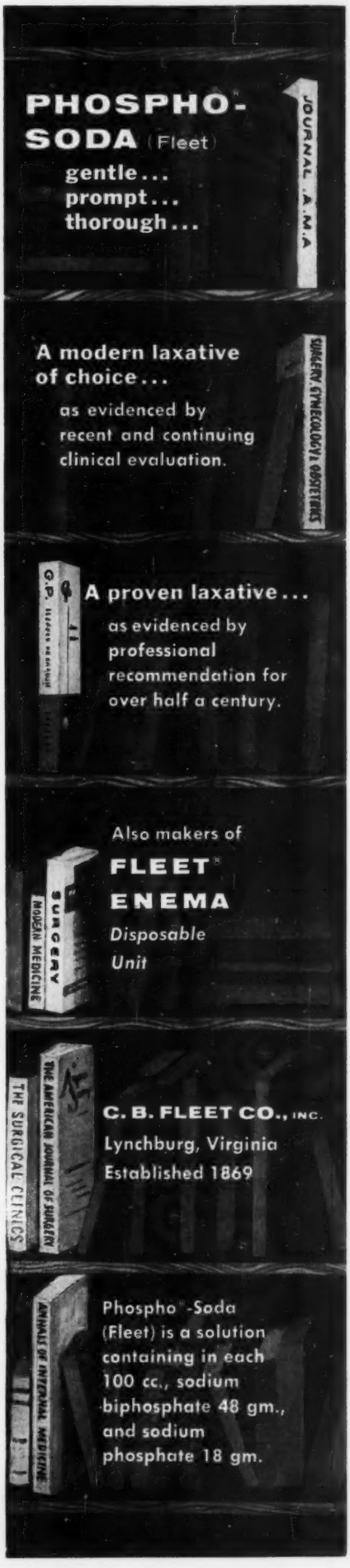
♣

"And now a word from our sponsor who has made this program impossible."

♣

"In answer to a request we will hear 'What a Beautiful Place Heaven Must Be' for a party of four."

(Continued on page 88)



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A goodly portion of the minerals in the oat seed is concentrated in the embryo and the outer cellular layers. Since only the inedible hulls are removed in the milling process, the entire mineral content of the edible whole grain is retained in ready-to-cook oatmeal.

Cooking in the home neither removes, nor lessens, nor vitiates the minerals.

The content of naturally-occurring iron and certain other minerals is notably high in oatmeal. In addition to the 4.5 mg. of iron in each 100 gm.[1] of rolled oats (dry), other nutritionally available minerals include potassium, phosphorus, magnesium, calcium, chlorine, copper, iodine, manganese, sodium, and zinc. The low sodium content makes oatmeal well-suited for sodium-restricted diets.

Quaker Oats and Mother's Oats are remarkably uniform in their mineral content, since careful selection of the oats used avoids the variations which climatic conditions and soil fertility may impose.

For its high mineral content, as well as its high protein and vitamin content, oatmeal merits the physician's continued recommendation as a key dish of America's breakfast.

1. Watt, B.K., and Merrill, A.L.: Composition of Foods—Raw, Processed, Prepared—Washington, D.C., United States Department of Agriculture, Agricultural Handbook No. 8, 1950.

Quaker Oats and Mother's Oats, the two brands of oatmeal offered by The Quaker Oats Company, are identical. Both brands are available in the Quick (cooks in one minute) and the Old-Fashioned varieties which are of equal nutrient value.

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TONICS AND SEDATIVES *(Continued)*

"As I look over the audience, I see many faces I should like to shake hands with."

♠

quotes of the week

"Impatience is best described as waiting in a hurry."

♠

"There are no hopeless situations. There are only people who have grown hopeless about them."

♠

"Nostalgia is longing for the place you wouldn't move back to."

♠

"Never explain. Your friends do not need it, and your enemies will not believe it anyway."

♠

During a discussion in a high school English class the question of choosing colleges was brought up.

One bright girl contributed her bit. "Well," she said, "first you have got to decide whether you want to go to a coeducational school or an educational one."

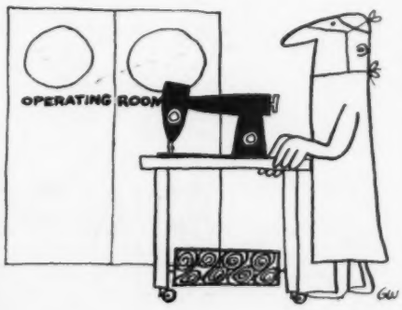
♠

For a lesson in tact consider the case of one of Washington's better known senators who completely failed to recognize a young lady.

She said to him reprovingly, "Why, Senator, you don't remember my name."

"No," was the gallant answer, "for when we last met I was sure your beauty and accomplishments would soon compel you to change it."

♠



♠

The doctor coughed rather gravely. "I'm sorry to tell you," he said slowly, looking down at the man in bed, "but you are suffering from scarlet fever, and it is extremely contagious."

The patient slowly turned his head and looked toward his wife. In a faint voice he said, "If any of my creditors call, you can tell them that at last I am in a position to give them something."

♠

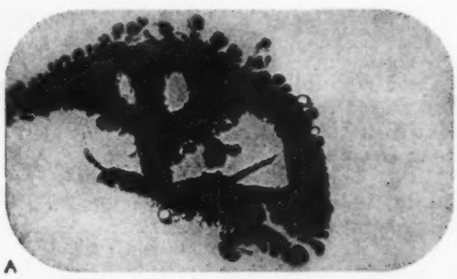
During the bitterness engendered by war Lincoln never missed an opportunity to speak kindly of the South.

An ardent Union supporter once took him to task for this attitude. "Why try to make friends of your enemies?" he protested. "You should destroy them."

"Am I not destroying my enemies," Lincoln said, "when I make friends of them?"

(Continued on page 90)

because TACE (Chlorotrianisene) is stored in "body banks" ...the menopause is smoother



A

*Tests performed for The Wm. S. Merrell Company by an independent radiological laboratory. Radioactive iodine supplied by the U. S. Atomic Energy Commission, Oak Ridge National Laboratory.

B

Section of rat omental fat containing TACE tagged with I^{131} (A) leaves radioautograph evidence (B) of TACE storage in body fat.

In a control study, I^{131} was administered *without* TACE. There was no evidence of the iodine in any of the body fat depots.

Radioautographs* prove unique TACE fat storage supporting fat bioassay findings of Greenblatt[1] and Thompson.[2]

Prolonged relief for months after cessation of therapy.

An average duration of relief from menopausal symptoms of 2.95 months after discontinuance of TACE therapy has been reported.[3] The fat storage property of TACE is unique, and produces a clinical response free from gross variations in estrogen stimulation.

TACE has three desirable requirements for effective hormonal treatment in the menopause[4]

1. Long-acting — TACE is the only long-acting orally administered estrogen. **2.** Orally administered — TACE is administered only by mouth and is stored in body fat.[1] **3.** Inhibits pituitary activity — in experimental animals TACE has less tendency to produce pituitary hyperplasia than other estrogens.[5]

Notable freedom from withdrawal bleeding and other side effects

In four series,[3,5-7] totaling 257 patients, 250 TACE-treated cases experienced no withdrawal bleeding . . . other side effects were minimal and TACE was well tolerated.

Average TACE Dosage: 2 capsules daily for thirty days. Severe cases may require additional short courses.

TRADEMARK: TACE®

1. Greenblatt, R. B., and Brown, N. H.: Am. J. Obst. & Gynec. 63:1361, 1952. 2. Thompson, C. R., and Werner, H. W.: Proc. Soc. Exper. Biol. & Med. 77:494, 1951. 3. Woodhull, R. B.: Obst. & Gynec. Surv. 3:201, 1953. 4. Editorial: Management of the Menopause, J.A.M.A. 158:566, 1955. 5. Edwards, B. E.: J. Indiana M. A. 47:869, 1954. 6. Gillam, J. S.; Hunter, G. W., and Darne, C. B.: J. Clin. Endocrinol. 14:272, 1954. 7. Nulsen, R. O.; Carmon, W. B., and Hendricks, H. O.: Am. J. Obst. & Gynec. 65:1048, 1953.

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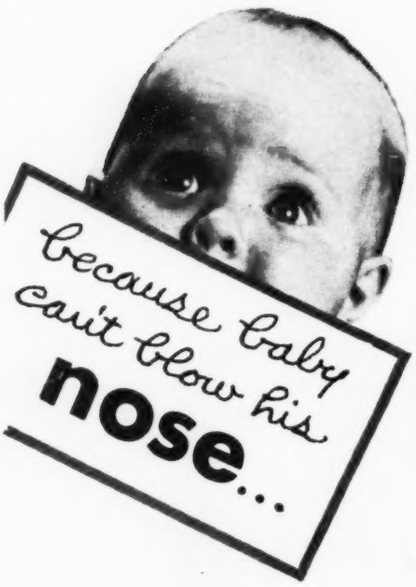

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Physicians are welcome to a professional supply of 'Q-Tips'.

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TONICS AND SEDATIVES *(Continued)*

George, it seems, was in difficulty. He had lent a friend $500, but he had nothing in writing confirming the loan. The friend proved to be merely friendly. George stood to lose the $500, so he consulted his father.

"That's not so hard, George," consoled the father. "Write him and say you need the $1,000 at once."

"You mean the $500," George answered.

"No, I don't. Say $1,000, and he'll write back he only owes you $500. Then you'll have it in writing."

♠

The hotel guest was awakened early one morning by a knock on his door.

"What is it?" he called drowsily.

"Telegram," came the answer.

"Well, can't you shove it under the door without waking me up so early?" the man asked.

"No, Sir," the voice answered. "It's on a tray."

♠

Mrs. Smith went to see her physician and was quite upset. She had a feeling she was going to die.

However, her physician soothed her. "Are you going to die? Why, my dear Mrs. Smith, that's the last thing you will do."

♠

This is Gypsy Rose Lee's succinct biography of another girl: "She's descended from a long line that her mother listened to."

♠

An American soldier of World War II picked some fruit at a country spot in the Philippine Islands. It looked delicious, but he strolled over to a native to make sure it was edible.

He gestured with his mouth to the boy, indicating he wished to eat it but he wasn't sure.

When another G.I. came in sight, the soldier said to him, "I've been trying to find out if this is good to eat."

Now the young native smiled. "Of course," he said. "It's rich in vitamin B."

—D. D.

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A photoelectric instrument for exact determination of

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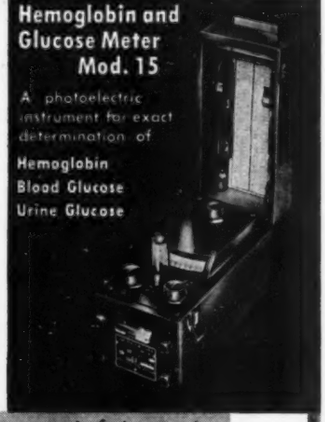

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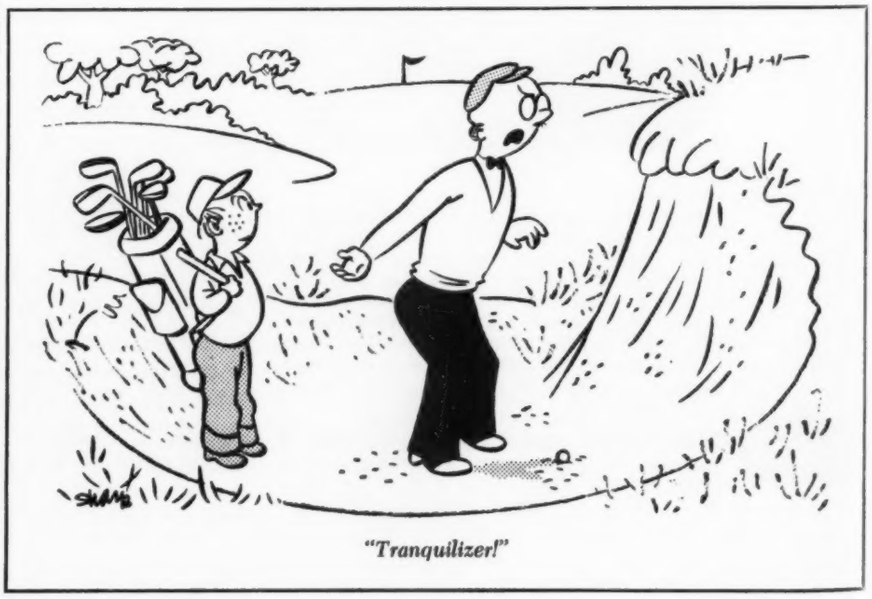

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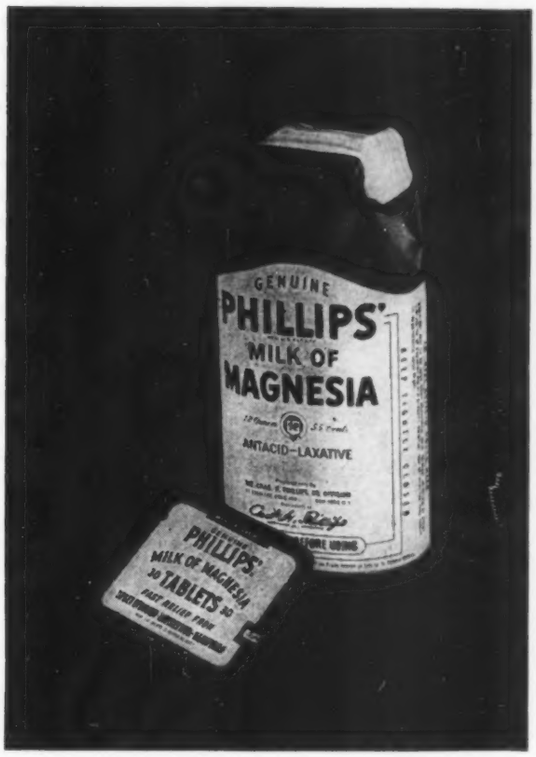

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(Continued from page 84)

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ASSISTANTS: (C16) By Board surg; pref. one int. orthopedics; res. town near univ. city, Neb. (C17) By Board surg; So. Calif.

DERMATOLOGY: (D53) Head dept, 12 man practicing independently; nearest 2 dermatologists, 250 miles; NW.

GENERAL PRACTICE: (F74) Group ass'n; coastal city, Fla; industrial boom; $10,000 or 40% of gross; new hosp; modern air-conditioned cl. bldg; partner after 2-3 yrs. (F75) G.P. to assoc. with busy surg., take care all med. cases; small hosp. providing offices for surg. & assoc; small town, Ky., good churches, schools; $1500-$2000 month. (F76) Ass'n, 22 man group; univ. town, 45,000; Rocky Mt. state; drawing area 150,000; recognized as med. center for 2 states; excel. future. (F77) Group ass'n; coastal town near San Francisco. (F78) Ass'n, 18 man group estab. as partnership '48; 1st yr, $12,000; 2d, $15,000; Chicago area.

INDUSTRIAL MEDICINE: (G16) Ass'n, one of country's leading clinics, long estab; staff of distinguished specialists; Calif. (G17) Med. dir; Mich. plant, lge co. (G18) Part time, Chicago area; one co. requires surg. or internist, Board men; another, traumatic surg; others wish GP's or men exp. indus. med.

INSURANCE MEDICINE: (X46) Young phy.; for Chicago office, woman phy. & male phy. for Eastern office, major co.

INTERNAL MEDICINE: (H24) Group ass'n, $1250 mo. 1st yr; plus $3000 equity in clinic; month's vacation yearly; Alaska. (H25) Young internist; ass'n long estab. group; own hosp; approved; New Eng. (H26) Ass'n, small group & hosp; res. town, Calif; $1500 month. (H27) Chief of med. & clinical services; new gen'l hosp, serving lge indus group; if Board, $17,000-$20,000; annual increases $1000 for 5 yrs; So.

NEUROSURGERY: (I22) Ass'n, Board neurosurg; busy pract; Calif.

OALR: (E58) Oto., qual. fenestration, naso-plastic; ass'n, lge priv. ALR pract; oppor. partner; San Francisco area. (E59) Oph., head dept, new gen hosp. serving indus. group; $17,000-$20,000; annual increases to $25,000.

OBSTETRICS - GYNECOLOGY: (J88) Ass'n, 15 man group founded by prominent internist, chief of dept, med. school; oppor. partner after yr; lge city, facilities 2 med. schools E; (J89) Group ass'n; area noted for fishing, hunting, Pac. NW; partner 3d yr. (J90) Head dept, group estab. '24; new clinic bldg; excel. hosp. facilities; lake resort area, Mich.

ORTHOPEDICS: (K37) Ass'n, 22 man group; own hosp; med. school city, W; oppor. faculty post; partner after yr. (K36) Head dept, 20 man group; suburb, med. school city, MW; partner after 2 yrs; sal., 1st yr, $18,000; 2d, $20,000. (K39) Head dept, 7 man group; small town, area becoming rapidly industrialized; near San Francisco.

PATHOLOGY: (L71) Dir. dept, vol. gen. hosp., 250 beds; town, 60,000, resort area, near Chicago; min. $25,000. (L72) Dir. dept. new gen'l hosp; 150 beds, increasing to 250; res. town adjacent lge city, med. school center, NY.

PEDIATRICS: (M56) Head dept, small group, own hosp; rapidly growing community, distinctly healthful climate, Calif; $1500 month. (M57) Head dept, new gen'l hosp, serving lge indus group; if Board $17,000-$20,000; annual increases $1000 for 5 yrs; So.

PHARMACEUTICAL INDUSTRY: (N1) Med. dir; newly created post; co. estab. '92; expansion prog; E. (N2) Young M.D. qual. public relations; duties: coordinate program planning, working with television, committees, various meetings.

P & N: (P29) Psy. pref. with psychoanalytical exp; and neurologist trained in EEG, interested in gen. clin. neurology to head sections now combined; 70 man group; univ. med. center. (P30) Dir. child guidance clinic; med. school city, So; oppor. faculty post; $15,000-$18,000.

RADIOLOGY: (R60) Dir. dept, vol. gen. hosp., 300 beds; % with guarantee $30,000 to $35,000; coll. town, MW. (R61) Associate rad; 700 bed teaching hosp; univ. city, SW.

SURGERY: (U16) Chief of surg; new gen'l hosp., serving lge indus group; if Board, $17,000-$20,000; annual increases $1000 for 5 yrs; So. (U17) Surg. trained in surg. of trauma; ass'n, lge priv. indus. pract; min. $1000; partner after yr; Mich.

UROLOGY: Group assoc; year-round resort town, New Eng.

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WANTED—PHYSICIAN TO TAKE OVER 10 ROOM office and clinic with staff privileges in modern hospital; all rent free; in good south Georgia town of 3500 with trade area of 12,000; practice already established; need be general practitioner with some surgery. Apply: Box 2314 C, % AMA.

WANTED — GENERAL PRACTITIONER FOR CLINIC in town of 25,000; each doctor has individual practice and shares the following facilities: x-ray, laboratory, cystoscopic, physiotherapy and operating room; open staff 100 bed hospital available. Write: R. L. Campbell, MD, Corsicana, Texas. C

INTERNIST — COASTAL COMMUNITY NEAR SAN Francisco; join 2 man department, small group; own modern medical building; 1st year salary, then full partnership; excellent hospital connections, Maria Gizzi, Pacific Coast Medical Bureau, Agy., 1404 Central Tower Bldg., San Francisco 3. C

OTOLARYNGOLOGIST — CALIFORNIA; OPPORTUNity to head department in 14 man group near Sacramento, California; salary first year; early full partnership; qualifications: certified or eligible, married, military service completed. Write: John F. Hollister, MD, Woodland Medical Group, Woodland, California. C

YOUNG PHYSICIAN — INTERESTED IN WORKING with a group of young doctors for 1 year or more in southern West Virginia; industrial and general practice; West Virginia license required. Contact: N. F. Coulon, MD, Gary, West Virginia. C

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WANTED — DECEMBER 1, 1956; 1 HOUSE PHYSIcian; July 1, 1957 3 house physicians; $600 salary in addition to full maintenance; prerequisite, Pennsylvania license or its equivalent. Apply: Martha C. Marks, Assistant Administrator, Westmoreland Hospital, Greensburg, Pennsylvania. C

GENERAL PRACTITIONERS — IMMEDIATE OPENings with medical group, southeastern Pennsylvania; excellent educational opportunities, paid annual vacation and study period; net starting income $12,000-$15,000 depending on trafning and experience. Box 2323 C, % AMA.

(Continued on page 96)

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unique, new DORBANTYL is clinically described as a "preparation of choice" in anorectal and colonic surgery, as well as in functional constipation and cathartic habituation.[1]

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supplied: Bottles of 30 capsules and 250 capsules.

references: (1) Marks, M. M.: In press. (2) Antos, R. J.: Southwestern Med. *37*:236, 1956. (3) Wilson, J. L., and Dickinson, D. G.: J.A.M.A. *158*:261 (May 28) 1955. (4) Marks, M. M.: Am. J. Digest Dis. *20*:240, 1953.

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(Continued from page 93)

PEDIATRICIAN — CALIFORNIA; YOUNG; JOIN 3 man department of well-established, highly regarded group, Sacramento area; financial arrangements open. Maria Gizzi, Pacific Coast Medical Bureau, Agy., 1404 Central Tower Bldg., San Francisco 3. C

WANTED—YOUNG PHYSICIANS TO DO PRACTICE in urban community; good openings with wide area to draw from; will accept 2 doctors to fill opening; good conditions in all respects. Hubbard Chamber of Commerce, Hubbard, Texas. C

OBSTETRICIAN-GYNECOLOGIST — WELL ESTABlished clinic; Southwest; must be graduate of approved medical school; completing accredited residency; under 35; forward biographical data for review. Box 2295 C, % AMA.

FELLOWS—IN CARDIOLOGY AND IN PULMONARY disease for the year beginning July 1, 1957; large approved municipal university teaching hospital*+ offers clinical and/or research experience in above categories; stipend. Box 2316 C, % AMA.

WANTED—PSYCHIATRISTS AND PHYSICIANS; SALary range to $15,000 depending on qualifications; research and teaching opportunities. For further information contact: Jack A. Wolford MD, Superintendent, Hastings State Hospital,+ Ingleside, Nebraska.

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PHYSICIAN WANTED — PROSPEROUS COMMUNITY serving area of 10,000 needs a doctor; new modern 8 room air conditioned building; 20 north of Birmingham, Alabama; rent free to start; adequate housing; hospital staff open. Box 2318 C, % AMA.

PSYCHIATRIST — EXPERIENCED OR INTERESTED; private sanatorium, office practice and consultations; Southwest "health country"; salary anticipating partnership; good opportunity. Write fully: Box 2304 C, % AMA.

WANTED—GENERAL PRACTITIONER OR INTERNist; growing industrial community of 3000; 40 minutes from Milwaukee, Wisconsin; real opportunity; community financed clinic. Northern Azaukee Clinic, Inc., Fredonia, Wisconsin. C

WANTED—AMERICAN BOARD SPECIALISTS; PHYsicians interested in group or private practice, teaching research, public health, or industrial medicine; National and International services. Our 60th Year. Woodward Medical Bureau, 185 N. Wabash Avenue, Chicago. C

PEDIATRICIAN—TO JOIN 14 MAN MEDICAL GROUP; including 3 surgical residents; 106 bed general hospital; college town of 3000 in West Virginia; opportunity to become a member of clinic partnership. Box 2310 C, % AMA.

ANESTHESIOLOGIST — DESIRES PARTNER FOR private practice; Midwest town, 40,000; net, $15,000 first year; start immediately; consider women. Box 2312 C, % AMA.

EXCELLENT OPPORTUNITY — GENERAL PRACTItioner; well-equipped office, fully furnished; office available immediately; excellent location, 2 blocks from hospital; Alexandria, Virginia. Box 2327 C, % AMA.

WANTED — ORTHOPEDIST; ASSOCIATION WITH nine man group leading to partnership; salary $20,000 with bonus; no capital outlay needed; professional and personal data requested. Box 2288 C, % AMA.

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Founders of the counseling service to the medical profession, serving medicine with distinction over half a century.

ANESTHESIOLOGY: (i) Hd dept; priv pract; charge own fees; 150 bd hosp; twn 40,000; MW. (j) Dir dept, gen hosp; $15-20,000; lge univ city; E.

DERMATOLOGY: (i) Dir dept, well estab grp; expan program, complete facils; $12,000, prtnr, 2nd yr; twn 30,000, nr univ med schl, MW. (j) Assn w/Derm, on tchg staff, med coll; oppor perm assn; Calif.

GENERAL PRACTICE: (v) Assn w/GP est '25; oppor netting $15-18,000, 1st yr; NJ. (w) Assoc w/GP, owns 5 yr old cl, med equip, lab, X-ray; $12,000, 1st yr; shld net $15,000 2nd yr; oppor prtnr; twn 20,000, So. (x) For fine 16 man grp; $15,000 yr, for first 2 yrs; Chgo area. (y) Staff, 590 bd, JCAH hosp. expanding; about $12,000; West.

INDUSTRIAL MEDICINE: (r) Exp'd flight surg; $9,600-$10,800 to start; Calif. (s) R.R. med; $10,500-$11,000 to start; univ city, East.

INTERNAL MEDICINE: (u) Dipl; assn w/Board surg, long estab, founding new cl; oppor $12-18,000; no Board int in twn, 50,000; Wisc. (v) Dipl, w/spec inter, GI; smal grp, Board men, long estab; excel facils; $18-25,000; SW. (w) Assn 10 man grp, expndg; new cl bldg under construction; affil, 2 JCAH hosps; guar sal, then prtnr; West.

NEUROSURGERY: (d) Assn w/Board neurosurg, semi-retired; must turn over maj portion, very heavy load; only 1 neurosurg in area; twn servg 250,000, NW.

OALR: (c) Oph; Dipl or elig; under 50; assoc w/Dipl, Oph, AAOO; univ city; MW. (f) Oph; hd dept, 9 Dipls; Excellent; So. (g) Oto; hd dept, already estab; 16 man cl, repres all specialties; oppor prtnr; tchg connection; lge city, So. (h) Oto; 15 man grp (1 Dipl Oto); twn 50,000; Calif. (i) Oair; Dipl; grp assn; shld net $25,000 1st yr; MW.

OB-GYN: (i) Dipl or elig; new 100 bd hosp, complete lab, research, welfare, & tchg facils; guar till profit priv pract; NE. (j) Two—Assn 20 man grp, est '22; sal & % averg $15-20,000 1st yr; univ city; MW. (k) Ptnrshp w/Ob-gyn long estab; %; one of larger cities; Fla lic req'd. (l) Assn 5 man grp; new med cl; $15-18,000; oppor prtnr; SW.

ORTHOPEDICS: (l) Assn 2 Board Ortho; busy priv pract; exc hosp facil; city 95,000, SE. (m) Dipl or elig; fine 16 man grp; $18,000, 1st yr; $20,000, 2nd; vic Chgo. (n) Hd dept, fairly lge grp; active fracture & outpatient serv; own hosp; $18,000; increases; prtnrshp; California

PATHOLOGY: (t) Hd dept, Dipl; 230 bd, JCAH, Vol, med schl affil, hosp; city 72,000, nr NYC. (u) Dir dept, fully apprd 600 bd hosp; tchg prog; air cond lab; well-staffed; oppor $30-40,000; So. (v) Assoc; 600 bd mid-west hosp; % basis, paying $18-20,000.

PEDIATRICS: (r) Hd dept; new hosp, exc facils; $17-20,000; So.East. (s) Assn, 11 man grp, estab 25 yrs; $12-15,000; W.Mtns. (t) Qual hd dept; grp 16 men (8 Cert); coll city 165,000; NW. (u) Hd dept; hosp servg area 20,000; $15,000; So. Calif.

PHYSICAL MEDICINE: (a) Hd dept; Dipl; new indus hosp grp; $17-25,000; South. (b) Med dir, neurological med center; $15-20,000; increases; MW.

P & N: (o) Dipl or elig; staff, well-estab Dept, new med psy unit; many cl MDs, Mayo trnd; twn 45,000; good sal, later member, no invest; MW. (p) Neuro; assn very lge grp distinguished men; oppor faculty appt; own hosp; S. (q) NP; Dipl; assn w/Board NP; $15,000; 2nd yr 35% of gross, increasing 5% yrly until equal prtnr; oppor $25,000; W.

RADIOLOGY: (u) Assn 12 man grp; 150 bd, JCAH hosp; $20,000, then prtnr; SE. (v) Dir dept, tchg hosp, 500 bds, expndg 700 bds; excel workg conds; oppor $30-40,000; MW. (w) Assoc w/Dipl, Rad; two offices, serves priv hosp; excel arrngmts; nr Los Angeles.

RESEARCH: (o) Assoc dir, cl research; tchg or research background; maj pharm co; $15-18,000; E.

SURGERY: (r) Chief; gen hosp, 100 bds; E. (s) Board Qual; to do surg for 1 GP & 1 Ob-gyn; sal, 6 mos, then prtnr; grp gross annually over $90,000. Cent.

UROLOGY: (i) Dipl or elig; assn w/2 Board urol, one seeking retirement, other faculty member, med schl; very busy pract; $12,000; lge city; MW.

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(Continued on page 98)

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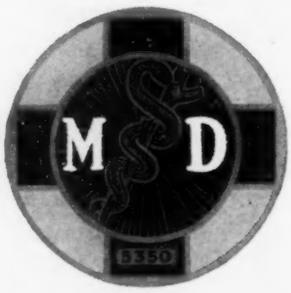

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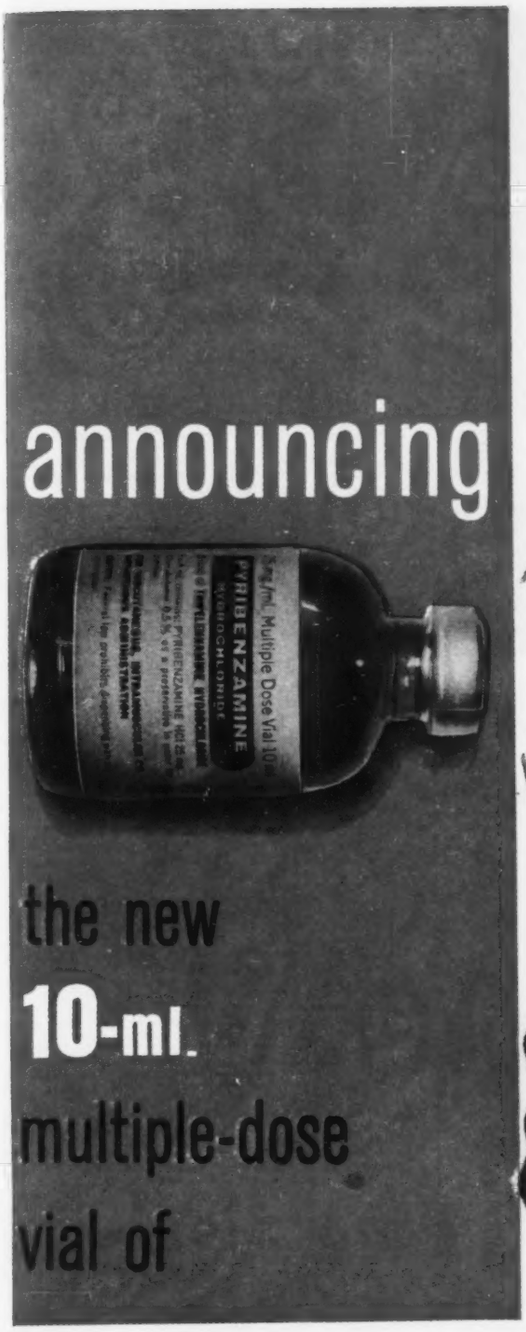

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Pyribenzamine, long a standard in antihistamine therapy, is now offered in a 10-ml. multiple-dose vial of Injectable Solution for

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For preventing anticipated blood transfusion reactions 1 ml. (25 mg.) of Pyribenzamine Injectable Solution is injected intravenously or through the air-vent needle directly into the bottle of blood to be transfused.

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Supplied: INJECTABLE SOLUTION:
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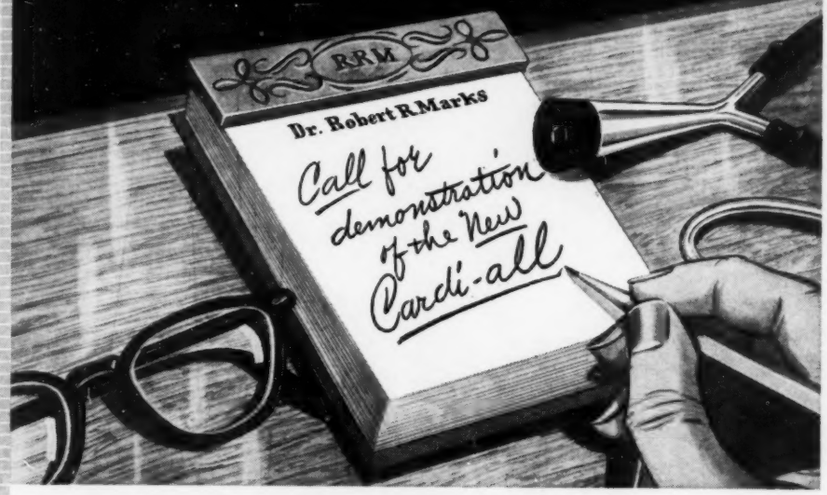

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ANESTHESIOLOGISTS: (a) East; 300 bed hospital in city of 100,000. (b) MW; 150 bed hospital operated by group of specialists; will be head of dept. 2 well qual. nurse anesthestists. (c) Teaching hospital; ample opp. for teaching and research plus clinical work.

GENERAL PRACTICE: (a) Calif; city of 60,000; assoc. with well-estab. G.P. diversified prac; $12,000. (b) Calif; 8 man grp. near S.F. (c) Fla. well estab. med. grp; excel opp. license req. (d) 6 man grp. near Wash., D. C.; good sal. start; ptnship 1 yr. (e) Assoc; genl. & surg. prac; NW; start; ptnship 1 yr. (f) Assoc; sub. of Chgo. large prac, excel opp. ptnship. (g) MW; well-known grp; own med. bldg. new; $12,000 1st year, $15,000 2nd., then ptnship. (h) MW; assoc. well-estab. prac. in city 90,000. $12,000. (i) S; Asst. large genl. prac. minor surg. no O.B. $12,000. (j) Assoc. MW; some surg. & O.B. City of 200,000. $10,000 min. to start. (k) NW; assoc. large prac. mining town of 6000 in resort area. $12,000 start inc. every 3 mo. ptnship 1 yr. (l) MW. Small grp. Own 35 bed hosp. City 25,000. $12,000. (m) Assoc. with 2 yng. G. P's. Chgo. suburb. Pere. average $1000 mo. first yr.

HOUSE PHYSICIANS: (a) E; 50 bed hosp; $4200 plus 2 bedroom apt. (b) E. 65 bed approved hosp.; $5000 full maint. incl. furnished house.

INDUSTRIAL PHYSICIANS: (a) S; company employs 1200; growing; 5 day wk; priv. prac. if desired; $11,000 start. (b) Calif; large company; supervise in-plant medical facilities. (c) E; assoc. with indus. phys; great deal of traumatics; some genl. prac; $12,000.

INSURANCE: (a) Medical consultant on all general health facilities. $10,000 plus. (b) Woman. Supervise active employes health program. $10,000.

INTERNISTS: (a) Chief of Clinical Services with outstanding hosp. grp. $17-$20,000. (b) Well estab. grp. near Chgo. Own air cond. medical bldg. exc. hosp. facilities. $15,000 1st yr. $18,000 2nd. then ptnshp. (c) MW. 5 man grp. opp. for teaching in med. shc. To $12,000. (d) MW. Small grp. in progressive community. Excel hosp. facilities $12-15,000. (e) NW. Well est. grp. in city 30,000. New clinic bldg. $12,000 minimum. (f) SW. 11 man grp. all board men; some indus. type work.

OB-GYN: (a) MW; well-known grp. city 50,000; $12,000. (b) NW; cert. not nec; well-estab. grp. city 30,000; $12,000. (c) SW. Grp. of 5 spec. will be only one this spec. $15-20,000.

OPHTHALMOLOGY: (a) SW; 10 man grp. in city of 65,000; modern clinic bldg; $12,000. (b) Calif; grp. of yng. spec; will be only eye man; $12,000 start. (c) Assoc. with Board man; near Wash., D. C.; excel opp. (d) MW; grp. of 15 men in large city; $15,000 ptnshp. 1 yr. (e) Assoc. with 2 Board men only ones in drawing area 250,000; $15,000. (f) Director Dept. 275 bed hosp. Excel. Staff.

PATHOLOGY: (a) SW; superv. med. spec. of lab. of old estab. clinic. $15,000 min. (b) NW; assoc. 200 bed hosp; city 75,000; $12,000 min. (c) S; 175 bed hosp; develope dept. Pere. basis; $20,000 guarantee. (d) assoc. Board man; SW; 250 bed hosp; $12,000 first yr. then ptnshp. (e) Calif. 300 bed hosp; $12-20,000.

PEDIATRICS: (a) SW; 10 man grp. growing rapidly; city 65,000; $12,000 start. (b) Calif; assoc. with 4 Board men; large prac; near S. F; $10-$12,000. (c) MW; small grp. in highly populated area; excel. hosp. facilities $12-$15,000. (d) E; assoc. with grp. of 4 internists; near Phila. $12,000. (e) NW; small grp; new clinic bldg. twn. 15,000; drawing area 40,000; $12-$14,000. (f) S. Assoc. Board man. Excel. financial arrangements. Calif. Well estab. med. grp. 12 spec. own med. bldg. $12,000.

PHARMACEUTICAL: (a) MW; clinical invest; some travel; $10-$12,000. (b) MW; export div; proficiency Span. and French; world travel; $12-$15,000. (c) E; clinical invest; $10,000 min. (d) Med. dir; some clinical invest; primarily admins; to $12,000. (e) East. Med. Dir. Superv. clinical trials and adv. $15-20,000. (f) Asst. Med. Dir. MW. Research. $12-$20,000.

PHYSIATRIST: To be Med. Dir. Large rehabilitation center, fully approved.

RADIOLOGISTS: (a) MW; active priv. lab; near Chgo; $12-$18,000. (b) NE; take over dept. in new 75 bed hosp; $15,000 min. (c) NW; 175 bed hosp; new lab; average earnings $2000 mo. (d) Calif. Assoc. Board man. ofc. and hosp. excel. opp for future.

TUBERCULOSIS: Med. Dir. SW. To $10,000 plus furn. house and compl. maint.

UROLOGIST: East. 17 man grp. own 130 bed hosp; $12-$14,400 start; increases period. for 2 yrs then ptnshp.

Upon request one of our applications will be mailed to you. Write us today—a post card will do.

(Continued from page 96)

PATHOLOGIST—TO HEAD DEPARTMENT OF 200 bed GM&S hospital; salary will depend upon qualification. Contact: Manager, Veterans Administration Hospital, Phoenix, Arizona. C

ANESTHETIST WANTED—EARLY NEXT JANUARY; take over fee-basis work for a year, then possible arrangement; small town; Midwest; yearly gross $15,000. Box 2307 C, % AMA.

WANTED—OPHTHALMOLOGIST; TO TAKE OVER AN active practice in Oregon; will introduce; grossing over $50,000. Box 2287 C, % AMA.

WANTED—FULL TIME PHYSICIAN FOR RAILWAY; must be eligible for license in Virginia, West Virginia and Ohio, and under age 55. Box 2298 C, % AMA.

WANTED—FIVE PHYSICIANS; THREE IN INTERnal or general medicine; (one with experience in tuberculosis); 1 radiologist; 1 clinical pathologist; Board certification preferred but not essential; interesting professional opportunity in 255 bed GMS hospital for younger men completing certification or middle age physicians desiring to ameliorate the physical demands of private practice; salary range: $8990 to $14,000 depending on the qualifications; citizenship and licensure mandatory. Apply: Manager, Veterans Administration Center, Hot Springs, South Dakota. C

ANESTHETISTS—POSITIONS OF CHIEF, ANESTHEsia section, and nurse-anesthetist, immediately available; Deans Committee Veterans Hospitals; combined capacity, 1190 beds; over 3000 operations annually; staff with faculty appointments, University of Pittsburgh Medical School; 10 fully approved or affiliated surgical residency programs; research facilities and faculty appointment available; applicant must be a citizen; salary commensurate with qualifications. Apply to: Director, Professional Services, Veterans Administration Hospital, University Drive, Pittsburgh 40, Pennsylvania. C

MEDICAL OFFICER—GLENN DALE HOSPITAL, THE tuberculosis hospital for the District of Columbia; salary $9000 to $10,300 per annum depending on qualifications; sick leave, annual leave and retirement benefits; satisfactory completion of 1 year of approved residency in pulmonary diseases or internal medicine, or comparable experience required; must be eligible for licensure in District of Columbia; outpatient clinic service connected with hospital. Address inquiries to: Medical Director, Glenn Dale Hospital, Glenn Dale, Maryland. C

PSYCHIATRISTS, PSYCHIATRIC RESIDENTS, AND general physicians—Indiana's Mental Health Program; superintendent: $13,800 plus complete maintenance; assistant superintendents, clinical directors, chiefs of service: $11,700-$14,000; psychiatrists: $9,300-$12,900; psychiatric residents: $4,380-$5,760; general physicians: $6,900-$9,900; U. S. citizenship and Indiana license required. Write: Division of Mental Health, 1315 West 10th Street, Indianapolis 7, Indiana. C

WANTED—ONE OR TWO PHYSICIANS; FOR MEDIcal department of long-established progressive coal and railroad company in West Virginia; general practice, employees and families; excellent complete office facilities, X-ray, diathermy, pharmacy, competent help; good proposition for 1 man; 2 young MDs just out of internship could do exceptionally well; modern housing available; satisfactory financial arrangements will be made; full cooperation of management. Box 2276 C, % AMA.

GENERAL PRACTITIONER—FOR STAFF OF GROUP practice clinic; serving membership of over 20,000, in Washington, D. C.; department heads and many other staff members have American Boards; prefer man with 2 years general internship and graduate of grade A medical school; annual salary open; 1 month vacation; study leave; sick leave; comprehensive retirement plan. Write to: Medical Director, Group Health Association, Inc., 1025 Vermont Ave., N.W., Washington 5, D. C. C

FELLOWSHIP VACANCIES IN CHILD PSYCHIATRY —at the Institute for Juvenile Research in Chicago, for January or July 1957; approved for 3rd year residency through Illinois Neuropsychiatric Institute; requirements: 2 years approved psychiatric training; salary $3,720 to $4,800 dependent on previous training. Write: Helen R. Beiser, MD, 907 South Wolcott, Chicago 13, Illinois. C

GENERAL PRACTITIONER OR INTERNIST—GROUP association with a 40 bed clinic-hospital group; salary with increase with percentage. Piggott Hospital Association, Inc., Piggott, Arkansas. C

(Continued on page 100)

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• In hyperacidity • In peptic ulcer

With ALUDROX, the management of acid distress and peptic ulcer is freed from factors that all too often limit therapy. For ALUDROX merges therapeutic and protective functions. The first is to provide prompt, prolonged, and effective acid neutralization.[1] The second is to protect the patient against acid rebound, alkalosis, and constipation.[2] It can cause no autonomic disturbance.

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1. Rossett, N.E., and others: Ann. Int. Med. *36*:98 (Jan.) 1952.
2. Jankelson, I.R.: Am. J. Digest. Dis. *14*:11 (Jan.) 1947.

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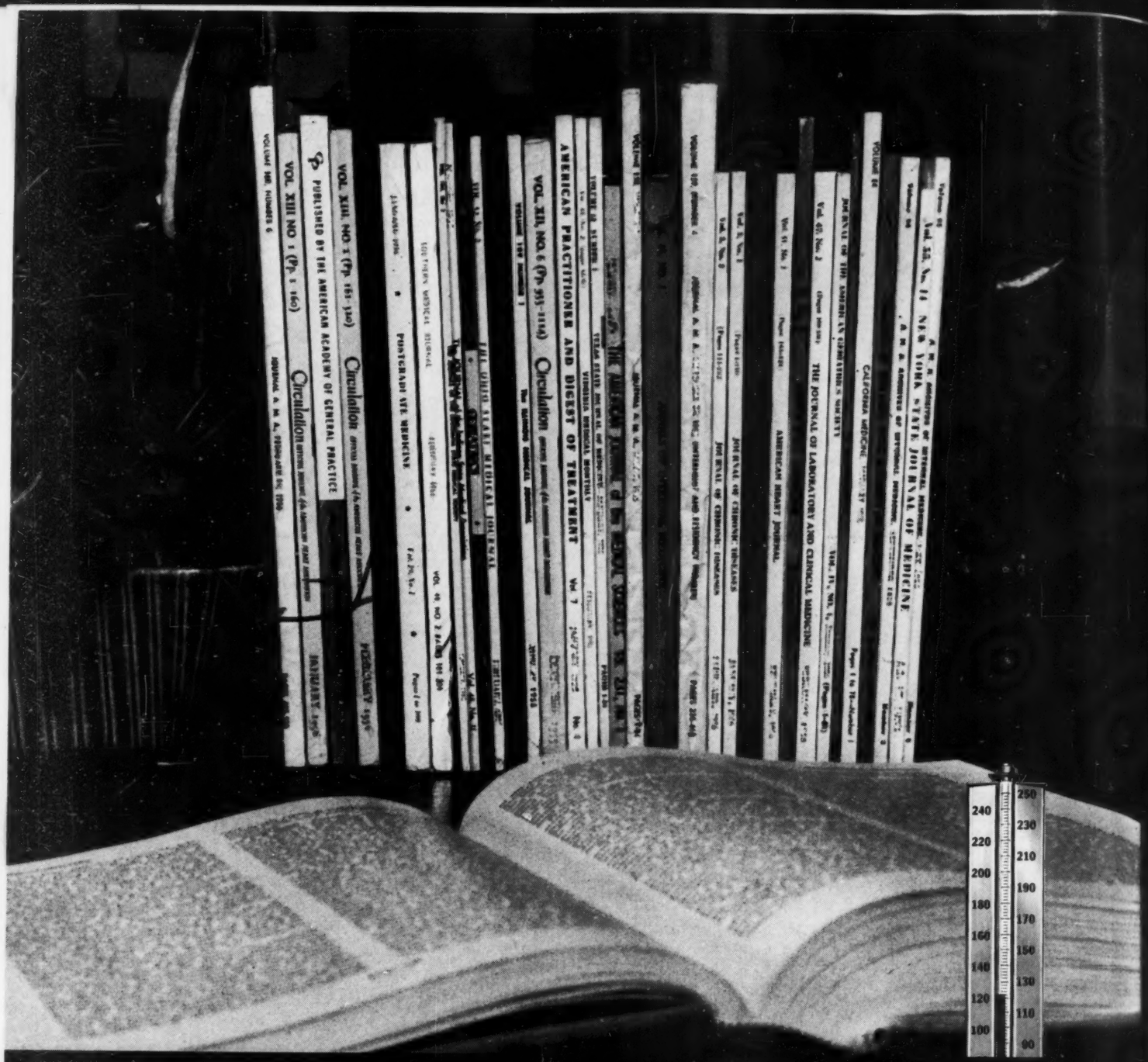

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"... a simple and [well-tolerated] regimen for the ambulatory management of hypertensive patients."[2]

"... reduction of the blood pressure may be achieved in substantially all forms of hypertension."[3]

"... possible in most patients to get a good control over blood pressure levels with comparatively few side-effects."[4]

"... significant falls ... occurred in systolic and diastolic blood pressure. ... The cardiac, retinal and coronary status of all patients was improved."[5]

1. Moser, M.: New York State J. Med. **55**:1999 (July 15) 1955. 2. Agrest, A., and Hoobler, S.W.: J.A.M.A. **157**:999 (March 19) 1955. 3. Smirk, F.H.: Am. J. Med. **17**:839 (Dec.) 1954. 4. Smirk, F.H., and McQueen, E.G.: J. Chron. Dis. **1**:516 (May) 1955. 5. Waldman, S., and Pelner, L.: Am. J. M. Sc. **231**:140 (Feb.) 1956.

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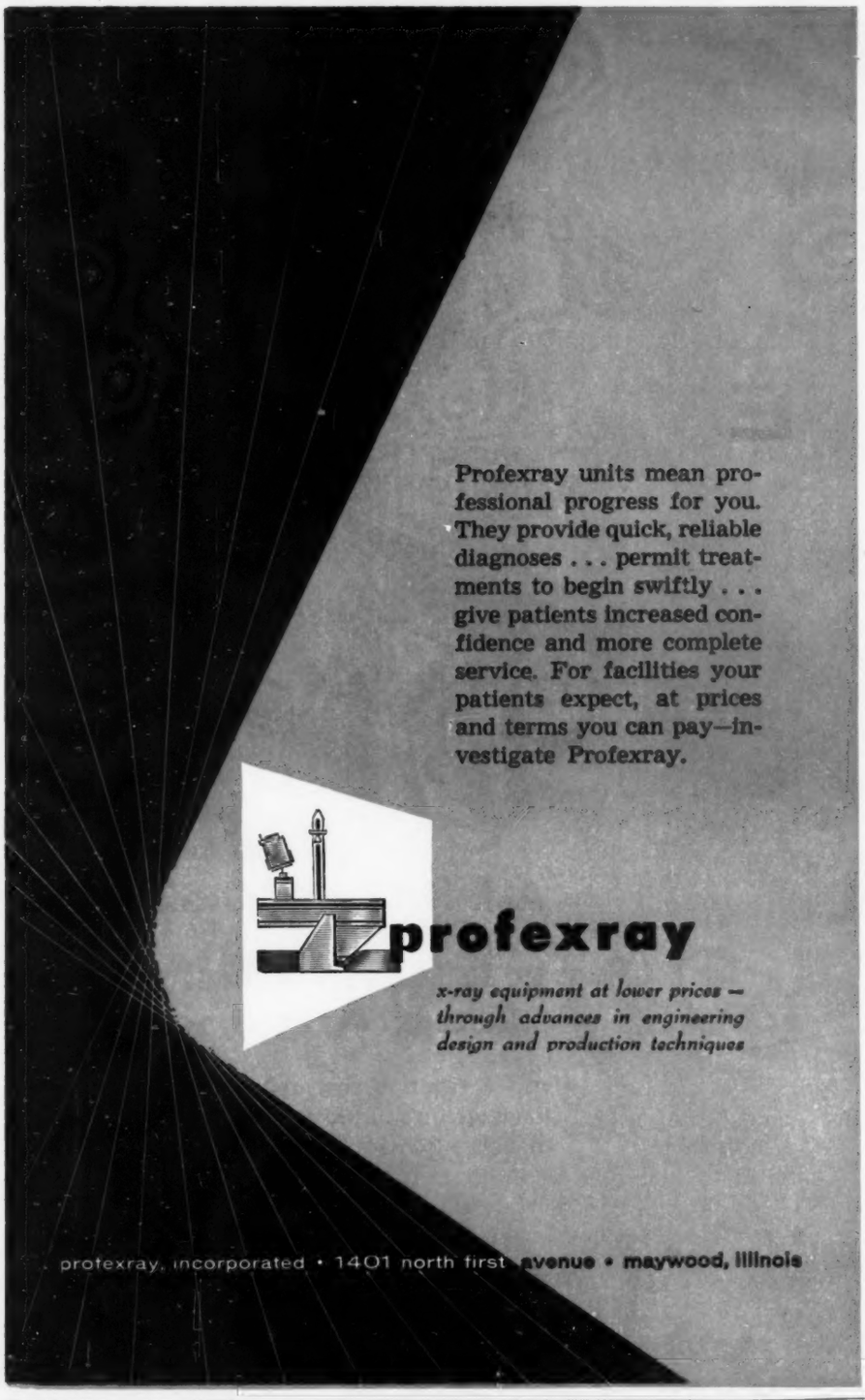
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(Continued from page 98)

WANTED—AN ASSOCIATE IMMEDIATELY IN LARGest county seat town in state; large established practice; modern equipment, medical secretary, registered nurse, and practical nurse; wil do utmost to make terms agreeable; have recently been approved for new 35 bed hospital, fully equipped, under the Hill-Burton plan and I am building a new modern clinic. Call collect or write: T. J. Burns, Houston, Missouri, Phone No. 9. C

PATHOLOGIST—TO WORK WITH GROUP SERVICING large midwestern metropolitan hospital*+; large surgical and autopsy service; approved 4 year residency; excellent staff relationship; good opportunity for Board or Board eligible man; would accept right man to complete training and remain with group; open salary; replies held confidential; our pathologist knows of this opening. Box 2284 C, % AMA.

PHYSICIANS WANTED — OPENINGS FOR PHYSIcians in a general medical clinic and for general medicine on a neuropsychiatric service in a university affiliated 1000 bed general hospital; well qualified general practitioners acceptable; salary open, not to exceed $10,320 if not certified, not to exceed $12,900 if certified; fringe benefits. Apply: Dr. A. Tomasulo, Director, Professional Services VA Hospital, Dayton, Ohio. C

PATHOLOGIST—CHARGE OF CLINICAL AND PATHological laboratory; training of student technicians; must Board certified; salary basis. Box 2271 C, % AMA.

PHYSICIAN WANTED—FOR A 242 BED TUBERCUlosis hospital+ which is part of a 3000 bed center affiliated with Ohio State University; experienced general practitioner acceptable; starting salary not to exceed $12,900 for a certified physician and $10,320 if not certified; maximum salary $13,760. Apply: Dr. A. Tomasulo, Director of Professional Services, Veterans Administration Center, Dayton, Ohio. C

WANTED — HOUSE PHYSICIAN; FOR HOSPITAL*+ with 296 beds and 36 bassinetts; for year beginning July 1, 1957; approved for interns, surgical, and pathology residencies; applicant must be licensed in Pennsylvania, or eligible for Pennsylvania licensing; good salary with complete maintenance; female physician acceptable. Apply to: D. W. Hartman, Administrator, The Williamsport Hospital, Williamsport, Pennsylvania. C

WANTED—PHYSICIAN; PHYSICIAN TO CARE FOR neuropsychiatric patients in 960 bed hospital, under supervision of a certified psychiatrist; opportunities for professional and salary advantages; house on station available for nominal rent; salary ranges from $7570 to $10,320 depending upon qualifications. Apply: Manager, Veterans Administration Hospital, Tuscaloosa, Alabama. C

PHYSICIANS—WITH OR WITHOUT PUBLIC HEALTH training; and pediatricians needed in maternal and child health program at salaries from $7895 through $9816; 5 day week, pension, civil service appointment. Dr. E. R. Krumbiegel, Milwaukee Health Department, City Hall, Milwaukee 2, Wisconsin. C

SURGICAL PATHOLOGY—1 YEAR FELLOWSHIP APpointments commencing July 1, 1957; Board approved; over 10,000 surgicals annually; $250 per month; 1 year prior training in anatomic pathology required; candidates must be graduates of Class A medical school. Write: Doctor Saul Kay, Medical College of Virginia, Richmond, Virginia. C

BOARD ELIGIBLE INTERNIST — FOR FLORIDA State Tuberculosis Hospitals; rapidly developing program with opportunities for advancement; beautiful hospitals; furnished houses available; liberal retirement and other benefits; salary dependent upon qualification. Write: Roberts Davies, MD, Director, State Tuberculosis Board, P. O. Box 286, Tallahassee, Florida. C

OTOLARYNGOLOGIST — FOR STAFF OF GROUP practice clinic; serving membership of over 20,000 in Washington, D. C.; prefer Diplomate or Board eligible physician; annual salary open; 1 month vacation; study leave; sick leave; comprehensive retirement plan; Write to: Medical Director, Group Health Association, Inc., 1025 Vermont Ave., N.W., Washington 5, D. C. C

EXCEPTIONAL OPPORTUNITIES—GENERAL PRACtice and anesthesia; Plymouth, Culver, and Argos, Indiana; county hospital addition being built; ethics, congeniality, rapport, vigor and sincerity of area physicians unexcelled. For complete information contact: James F. Rimel, MD, Secretary, Marshall County Medical Society, Plymouth, Indiana. C

GENERAL PRACTITIONER NEEDED—FOR RURAL group practice; preventive medical program stressed; surgical experience and sociological interest helpful; age no factor; great need exists; opportunity arising to set up own surgical and medical service in new hospital. Richard Ricklefs, MD, Community Health Association, Hoopa, California. C

POSITION ON COLLEGE HEALTH STAFF — (4,000 students) for general practitioner interested in active service with excellent patients, ideal climate, regular hours, congenial staff (average age 38 years), reasonable salary, and retirement. Write: Medical Director, California State Polytechnic College, San Luis Obispo, California. C

OPPORTUNITY AVAILABLE FOR YOUNG PHYSIcian—in Professional Service department of medical division; should have ability and interest in medical writing; clinical or laboratory research experience desirable; large midwest ethical pharmaceutical company; for further details please write and send resume. Box 2252 C, % AMA.

WANTED—ONE GENERAL SURGEON; BOARD CERtified or eligible; for active VA 200 bed general medical and surgical hospital, Fort Harrison, (Helena), Montana; salary $8990 to $13,760 per annum depending on qualifications; supervision by Board certified specialist available. Address: Manager, VA Center, Fort Harrison, Montana. C

PSYCHIATRICS WANTED—SALARY $7570-$12,685 DEpending upon qualifications; 25% aditional if Board certified (not to exceed $13,760); approved 3 years psychiatric residency in conjunction with Northwestern University; hourly commuting distance Chicago. Write: Manager, Veterans Administration Hospital+, Downey, Illinois. C

NEW MEXICO — ASSOCIATE GENERAL PRACTICE with obstetrics-gynecology Board eligible man; opportunity for future establishment small clinic; salary start; percentage; beautiful year-round, sunny, dry, warm southwest city, 5000 feet elevation. Ray C. Bitterlich, MD, 142 Truman Avenue, Albuquerque, New Mexico. C

WANTED—A WELL-QUALIFIED GENERAL PRACTItioner; to associate with group of 4 doctors in city of 3,300, central Wisconsin; with own hospital of 50 beds, own clinic building, and drug store; a wonderful opportunity for a young man. Contact: Dr. J. S. Hess, Hess Clinic, Mauston, Wisconsin. C

EXCELLENT OPPORTUNITY—FOR PHYSICIAN INterested in becoming established 50 miles from Chicago as an asistant to a general practitioner; must qualify for AMA membership and have an Illinois license; starting salary $700 per month; opportunity for partnership if mutually satisfactory. Box 2257 C, % AMA.

WANTED—INTERNIST; 254 BED GENERAL MEDical and surgical hospital; supervised by Board certified physician and approved for preceptorship training; hospital located at home of University of Arkansas and in the heart of the Ozarks. Contact: Manager, VA Hospital, Fayetteville, Arkansas. C

PHYSICIAN INTERESTED IN INTERNAL MEDICINE —to serve under Board certified chief of medicine; new 200 bed GM&S hospital, salary to $13,760 depending on qualifications; U. S. licensure, citizenship required. Write: Manager, Veterans Administration Hospital, Clarksburg, West Virginia. C

WANTED—PHYSICAL MEDICINE MAN; FOR POSItion of medical director of large, well-equipped rehabilitation center serving wide area with comprehensive program; facility has full approval of Joint Commission on Accreditation; salary open. Apply: J. E. Pearson, Morris Memorial Hospital, Milton, West Virginia. C

WANTED—BOARD QUALIFIED OR CERTIFIED MAN; for permanent association and future partnership in the ENT department with a large group in Southern California; starting salary $1000 to $1200 per month depending on age and experience; must have California license. Box 2140 C, % AMA.

ROENTGENOLOGIST—FOR LARGE TEACHING HOSpital+ affiliated with Ohio State University Medical School; citizenship required; salary dependent on qualifications. Write to: Dr. A. Tomasulo, Director, Professional Services, VA Center, Dayton, Ohio. C

WANTED IMMEDIATELY — RESIDENT PHYSICIAN; railroad hospital; Indiana town of 15,000 population; good salary, applicant must be graduate of United States Class A Medical School; must qualify for Indiana license. Box 2258 C, % AMA.

INTERNISTS AND GENERAL PRACTITIONERS wanted—in 2400 bed hospital+; hourly commuting distance Chicago; salary ranges $7570-$12,685, depending upon qualification . Write: Manager, Veterans Administration Hospital, Downey, Illinois. C

(Continued on page 102)

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1. Weiss, E., and English, O.S.: Psychosomatic Medicine. W. B. Saunders Co., Philadelphia, 1949, p. 305.
2. Lemere, F.: Northwest Med. *54*:1098 (Oct.) 1955.

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(Continued from page 100)

CALIFORNIA MEDICAL BUREAU AGENCIES—FTR physicians placements, and hospitals and medical properties for sale. 405 E. Green Street, Pasadena, California, and 610 S. Broadway Street, Los Angeles 14, California. C

GENERAL PRACTICE ASSOCIATE — IN GROWING mid-Ohio valley town; prefer young man just completing training or military service; salary or percentage; write giving professional and personal background. Box 2184 C, % AMA.

RADIOLOGIST — ASSOCIATE; OFFICE PRACTICE and local hospital; suburb contiguous to Boston; Board certified, preference to additional post-residency training; financial arrangements leading to partnership; send details. Box 2185 C, % AMA.

WANTED—OPHTHALMOLOGY AND OTOLARYNGOLOGY residents; 4 years combined+ EENT, 3 years ophthalmology; beginning stipend $350 a month; Virginia license required; give full details in 1st reply. Box 2175 C, % AMA.

PHYSICIAN WANTED — FOR WELL-EQUIPPED 90 Bed northern California County hospital; California license necessary; active medical program in rapidly growing community. Please address inquiries to: Medical Director, P. O. Box 639, Redding, California. C

WANTED—TWO PHYSICIANS INTERESTED IN GENeral practice: to join group in growing southern suburb; permanency desired; salary to be discussed. Address: P. G. Thomsen, MD, 13826 Lincoln Ave., Dolton, Illinois. C

PHYSICIAN NEEDED—PEDIATRICIAN, OR PHYSIcian with pediatric experience, to join busy practice; physician must be willing to do obstetric and general work; salary to be determined on interview. Box 2221 C, % AMA.

PHYSICIAN WITH ADMINISTRATIVE ABILITY—TO direct staff in reviewing and editing research literature; broad medical experience desirable; salary $11,000-$12,000; insurance and retirement benefits; state detailed experience. Box 2244 C, % AMA.

WANTED — RECENT APPROVED SCHOOL GRADUate for 5 man group; small progressive city, 75 miles from Chicago; Illinois license required; salary leading to partnership; 50 bed hospital with addition now constructing. Roberts Clinic, Watseka, Illinois. C

WANTED—PEDIATRICIAN; A 13 MAN GROUP; MIDdle west; near Chicago; clinic in existence for 14 years; serves community of 200,000 population; present pediatrician needs qualified associate; salary open. Box 2236 C, % AMA.

GENERAL PRACTITIONER—AGE UNDER 35; TO REplace retiring MD; a group practice; population ½ million; Ohio license; $10,000 for 1st year assured while developing your own practice. Box 1973 C, % AMA.

WANTED—AMERICAN BOARD SPECIALISTS; PHYsicians interested in group or private practice, teaching, research, public health or industrial medicine; National and International services. Burneice Larson, Director, Medical Bureau, 900 N. Michigan Ave., Chicago. C

WANTED — GENERAL PRACTITIONER; IN EXCELlent farming community; new combination office and dwelling; new hospital 12 miles away; new industry employing 100 men recently established. Contact: O. A. Kutter, Compton, Illinois. C

WANTED — EENT DEPARTMENT HEAD IN SIX doctor clinic in Texas; ophthalmologist preferable; Board certification desirable, not necessary. Box 1024 C, % AMA.

WANTED—UNMARRIED, FEMALE PHYSICIAN; TO assist in busy, Northern Ohio obstetrical and gynecologic practice; special training welcome but not necessary; salary first, association later. Box 2220 C, % AMA.

WANTED—BOARD OR BOARD ELIGIBLE PEDIATRIcian; to join a 2 man pediatric group as a third associate; very large practice in a growing industrial area of Texas; wonderful opportunity. Box 2245 C, % AMA.

INTERNIST OR GENERAL MEDICAL PHYSICIAN wanted—salary range $7570-$11,610, depending upon qualification. Write: Manager, Veterans Administration Hospital, Muskogee, Oklahoma. C

ORTHOPEDIC SURGEON—CERTIFIED OR ELIGIBLE; immediate opportunity of association leading to partnership in 8 man group; new quarters; southern Wisconsin industrial city of 35,000. Box 2231 C, % AMA.

WANTED — UROLOGIST; BOARD CERTIFIED; TO gradually take over practice, Western Pennsylvania; going into semiretirement; practice is extremely lucrative; 550 bed hospital. Box 2189 C, % AMA.

ANESTHESIOLOGIST — WANTED TO JOIN ESTABlished group in large city in Mid-West; excellent financial arrangements with paid vacations; furnish complete details in letter to AMA. Box 2141 C, % AMA.

WANTED — INTERNIST; BOARD QUALIFIED OR certified; 10 man group in Mid-West has staff opening; liberal salary with eventual partnership. Box 1547 C, % AMA.

OTOLARYNGOLOGIST — PARTNERSHIP; WELL-ESTablished practice, medical center, connected with university; unlimited opportunity for well-trained man with academic interests. Box 2186 C, % AMA.

WANTED — RADIOLOGIST; ASSOCIATION WITH 9 man group leading to partnership; salary $20,000 with bonus; no capital outlay needed; professional and personal data requested. Box 2208 C, % AMA.

WANTED—HOUSE PHYSICIAN FOR 40 BED HOSpital; west Texas; salary $450 per month plus maintenance; must have Texas license. Box 2249 C, % AMA.

WANTED — GENERAL PRACTITIONER; FOR TEN man group in Mid-West; liberal salary with eventual partnership. Box 1548 C, % AMA.

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*The * signifies a hospital approved for internships and the + approved for residencies in specialties by the Council on Medical Education and Hospitals of the A. M. A. Consult Council's approved list for types of internships and residencies approved.*

THREE YEAR RESIDENCY IN PATHOLOGIC ANATomy ad clinical pathology—in 710 bed Veterans Administration Hospital,+ including gynecologic and pediatric pathology in associated hospitals and participation in major research programs; hospital is a VA center for thoracic and cardiac surgery, and for treatment of tumors; yearly salary; junior resident (1st year), $2840; intermediate resident (2nd year), $3195; senior resident (3rd and 4th year), $3550; excellent climate; pleasant living conditions. Write: Director, Professional Services, VA Hospital, Oakland, California. D

PATHOLOGY RESIDENCIES — FOUR YEAR APproved program in clinical pathology and pathologic anatomy, first or second year, and third year residencies available now; starting July 1, 1957, 1 vacancy for each year; salary; first and second year $300 per month, including full maintenance; third year, $400; fourth year $450; active training program; 760 bed general hospital*+; applicant must be U. S. citizen, have or be eligible for California license. Write: Pathologist, Sacramento County Hospital, Sacramento, California. D

AVAILABLE JULY 1, 1957—APPROVED RESIDENcies in medicine and obstetrics-gynecology; surgical residencies approved for training in preparation for surgical specialties; 224 bed general hospital,*+ modern, well-equipped; resident training program; house staff allowed full range under proper medical supervision; full maintenance and uniforms; monthly stipend: assistant residents $250, residents $300 The Lawrence and Memorial Associated Hospitals, New London, Connecticut, Hilliard Spitz, MD, Chairman, Committee on residents. D

RESIDENCIES AVAILABLE—MODERNLY EQUIPPED 516 bed, GM&S, fully approved VA Research Hospital+; affiliated with Northwestern University Medical School; openings now for residents in internal medicine, general surgery, pathology, physical medicine and rehabilitation, diagnostic and therapeutic radiology; must be U. S. citizens and graduates of approved schools; stipend $2840-$3550. For information write: Director, Professional Services, VA Research Hospital, 333 E. Huron St., Chicago 11, Illinois D

FULLY APPROVED OBSTETRICS-GYNECOLOGY RESidencies—January 1, 1957, for 2 and 2½ years to complete program now being expanded to 4 years' residency; transfer in summer of 1957 from present location to Washington Hospital Center, an 800 bed general hospital now being built; applicants should already have 1 year training in specialty; salary $220 plus maintenance. Write: Administrator, Garfield Memorial Hospital,* Washington, D. C. D

HOUSE PHYSICIAN—123 BED GENERAL HOSPITAL; northern New York State; salary plus maintenance. Apply: D. J. Thomas, Executive Director, Nathan Littauer Hospital, Gloversville, New York. D

(Continued on page 104)

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References: 1. J. Chronic Dis. 2:645 (Dec.) 1955. 2. J.A.M.A. 154:213 (Jan. 16) 1954. 3. New and Nonofficial Remedies 1956, pp. 512, 513.

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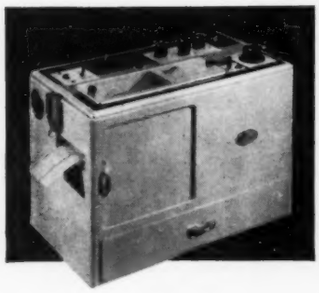

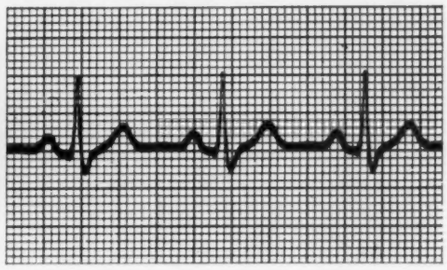

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(Continued from page 102)

RESIDENCIES—MENNINGER SCHOOL OF PSYCHIATRY+; approved 3 year program; balanced clinical and didactic training including psychotherapy and somatic therapies, outpatient and child psychiatry; at VA, State and Menninger hospitals; affiliated with Topeka Institute for Psychoanalysis; 5 year appointments combining residency and staff experience for Board eligibility available at staff salaries. Write: Registrar, Menninger School of Psychiatry, Topeka, Kansas. D

GENERAL PRACTICE RESIDENCY—A 2 YEAR RESIdency is offered at the University of Colorado Medical Center,*+ with a choice of programs in the second year; appointments are now being made for July 1, 1957. Apply to: The Office of Postgraduate Medical Education, University of Colorado Medical Center, 4200 East Ninth Ave., Denver 20, Colorado. D

APPROVED RESIDENCIES IN PULMONARY DISeases—offering broad variety of experience in TB and non-TB lung disease, available July 1, 1957; teaching hospital+ in Health Center, Ohio State University; salaries various grades $3,456 to $5,200. Write: Director, Ohio Tuberculosis Hospital, Ohio State University Campus, Columbus 10, Ohio. D

WANTED — TWO SECOND YEAR SURGICAL RESIdents; graduates of approved schools only; for 350 bed, midwestern hospital, with full 4 year approved general surgery program. Box 2322 D, % AMA.

ANESTHESIOLOGY — ONE OR TWO YEAR RESIdency fulfilling the requirements for the American Board of Anesthesiology certification; stipend 1st year $2400; second year $3000. Write to: Leo V. Hand, MD, or Francis J. Audin, MD, Department of Anesthesiology, New England Deaconess Hospital+, Boston, Massachusetts. D

PEDIATRIC AND MEDICAL RESIDENT—AVAILABLE July 1, 1957; 1 year approved program in medicine; 2nd year pending following inspection; 2 year approved program in pediatrics; both programs affiliated with large charity hospital. Apply: Administrator, Baptist Hospital*+, Nashville, Tennessee. D

INTERNSHIPS—AMA AND ACS APPROVED ROTATing services; 175 bed general hospital*; excellent educational programs, seminars, clinics and conferences; all services; teaching staff; wonderful opportunity; salary $100 month; full maintenance. Walther Memorial Hospital, Chicago 51, Illinois. D

PATHOLOGY RESIDENCY—FULLY APPROVED; 325 bed teaching hospital*+; 4 year program for certification; research encouraged; opportunity for participation in medical school program; $3300 to $6000 according to year of service. Lee N. Foster, MD, Pathologist, St. Vincent's hospital, Indianapolis, Indiana. D

SURGERY RESIDENCY—3 YEAR APPROVED PROgram*+; training includes general, orthopedic, thoracic and neuro-surgery, additional work in gynecology, and pathology; 1st year opportunity available July 1, 1957; $3300 beginning stipend. Box 2324 D, % AMA.

RADIOLOGY—FIRST YEAR RESIDENCY*+ AVAILable summer 1956, New England; fully-approved 3 year program including isotopes, radiation therapy, megavoltage; 3 full time Board radiologists plus physicist; monthly stipend $150 plus $80 family allowance. Box 2329 D, % AMA.

RESIDENCY AVAILABLE NOW—IN 180 BED HOSpital; rotating or in surgery; surgery active; foreign graduates with 1 year approved internship acceptable; salary open for negotiation. Apply: Administrator, Leigh Memorial Hospital, Mowbray Arey, Norfolk, Virginia. D

OPPORTUNITY—FOR RESIDENCY TRAINING FOR A limited number of physicians starting January 1957 or July 1957; accredited for 2 years training. For further information contact: Jack A. Wolford, MD, Superintendent, Hastings State Hospital,+ Ingleside, Nebraska. D

UROLOGY RESIDENCY—PRESENT VACANCY FOR A first year resident in a fully-approved 3 year program, affiliated with New York University; training offered on a 50 bed service with supervision by a full-time Board urologist; broad experience afforded, including transurethral, perineal and radical surgery; U.S. citizenship, graduation from an approved medical school, and a minimum of 1 year of approved internship required; additional surgical training preferred. Candidates may apply to: Manager, Veterans Administration Hospital+, 408 First Avenue, New York 10, New York. D

RESIDENCIES AVAILABLE—APPROVED RESIDENcies in medicine, surgery, pediatrics, obstetrics and gynecology, and general practice available July 1, 1957; 294 bed, 43 bassinet city operated hospital*+; annually 14,000 in-patients 8,000 out patient visits, 12,000 emergency room visits; approved 15 interns; total house staff 30; teaching program well organized and operating; fundamentals and objectives of program available on request; beginning salary $300. Write: Director, City Hospitals, % City Memorial Hospital, Winston-Salem, North Carolina. D

APPROVED THREE RESIDENCY IN INTERNAL MEDicine available—for graduates approved schools to start January 1, 1957; rotation through private and staff services plus pathology and participation in clinics at the Detroit Receiving Hospital*+; rotating services in psychiatry at Lafayette Clinic, Contagion at Herman Kiefer Hospital, pediatrics at Children's Hospital and courses at Wayne University. For further information please write to: Dr. C. J. France, Director of Education, Detroit Memorial Hospital, 1420 St. Antoine St., Detroit 26, Michigan. D

RESIDENT SURGEONS—WHO NEED FURTHER PREceptorship training to meet Board requirements, or surgeons who have completed their residency training; opportunity to do a large volume of major cancer surgery in a research institute; 1 or 2 year appointments available; surgeons with training in academic program preferred; participation in research program a requirement; stipend $4100 annually. For further details write to: Dr. H. C. Moss, Roswell Park Memorial Institute+, Buffalo 3, New York D

RESIDENCIES AVAILABLE—MODERNLY EQUIPPED 516 bed, GM&S, fully approved VA Research Hospital+; affiliated with Northwestern University Medical School; openings now for residents in internal medicine, general surgery, pathology, physical medicine and rehabilitation, diagnostic and therapeutic radiology; must be U. S. citizens and graduates of approved schools; stipend $2840-$3550. For information write: Director, Professional Services, VA Research Hospital, 333 E. Huron St., Chicago 11, Illinois. D

OPHTHALMOLOGY RESIDENCY — DUE TO UNEXpected loss of senior resident from this medical school service, there is immediate opening available as resident or senior assistant resident for applicant with sufficient background; service offers generous surgical and clinical experience plus active participation in teaching and research; generous stipend. Write: Winston Roberts, MD, North Carolina Baptist Hospital*+ and Bowman Gray School of Medicine, Winston-Salem, North Carolina. D

APPROVED PSYCHIATRIC RESIDENCY — 500 BED hospital+ in Chicago medical center; Deans Committee supervised didactic-clinical program on 95 bed psychiatry and neurology service, affiliated with University of Illinois, Loyola University, Chicago Medical School, Institute Juvenile Research, County Psychopathic Hospital, and large outpatient clinic. Write: Manager, Veterans Administration West Side Hospital, 820 South Damen Ave., Chicago 12, Illinois. D

PEDIATRIC RESIDENCY APPROVED — AVAILABLE November 1, 1956; because of sudden call to service; 300 bed hospital*+; active pediatric service and out-patient department; special emphasis on heart disease and neuropsychiatric problems in children; close proximity to 1 medical schools; salary $150 and up depending on amount of previous training. Apply: Administrator, Mount Zion Hospital, 1600 Divisadero Street, San Francisco, California. D

PATHOLOGY RESIDENCY — 1ST YEAR APPOINTment; also advanced appointment available; starting January 1, 1957; hospital 500 adult beds, fully-approved for 4 years pathology residency; pathologist Board certified; stipend $275 per month plus room uniforms, and laundry; foreign applicants considered; preference given to those completing 1 year U.S. internship. Write: Frederick J. Raisch, MD, Director of Laboratory, Aultman Hospital*+, Canton 10, Ohio. D

APPROVED THREE YEAR RESIDENCIES IN PSYchiatry—new GM&S hospital+; well-organized teaching program; affiliated with Washington University School of Medicine; all types of psychiatric experience represented, including supervised dynamically oriented psychotherapy, psychosomatic medicine, child guidance clinic, etc.; attractive career residency program available. Write: Manager, VA Hospital, 915 North Grand Blvd., St. Louis 6, Missouri. D

RESIDENCY IN PULMONARY DISEASES—1-2 YEARS fully approved; training in tuberculous and nontuberculous chest diseases, including asthma, emphysema, bronchitis and cardiology; rotation through cardiopulmonary laboratory; stipend between $250 to $350 per month, less maintenance. Apply: Dr. I. Kass, Assistant Medical Director, National Jewish Hospital+ at Denver, Denver, Colorado. D

ROTATING RESIDENCY—FOUR VACANCIES JANUary 1st; $2400 per annum plus full maintenance. Apply: Administrator, Petersburg General Hospital, Petersburg, Virginia. D

(Continued on page 106)

Cradle Song for a Restless Child

As pacifying as a rocking chair, Butisol is like a lullaby. It gives a gentle nudge over the threshold of sleep.

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TABLETS 15 mg. (¼ gr.), 30 mg. (½ gr.), 50 mg. (¾ gr.), 100 mg. (1½ gr.), Repeat Action 30 mg. and 60 mg.

ELIXIR, 30 mg. (½ gr.) per 5 cc.

CAPSULES, 100 mg. (1½ gr.)

Her most important asset is her *health.* ➤ With health, she is happy, relaxed and capable of serving her family and community. ➤ Today, parents turn to their family physician for advice on scientific methods of child-spacing, for it is he who recognizes the medical necessity for such advice . . . guides her . . . and earns her gratitude. Without this attention from her doctor, in whom she places her confidence, her family goals would not be easily obtained. It's the incomparable knowledge, skill and experience of her doctor...and doctors everywhere...whose judgment is to recommend for their patients' health and happiness — *Koromex*

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KOROMEX JELLY, CREAM AND DIAPHRAGM COMPACT

Boric acid 2.0%, oxyquinolin benzoate 0.02% and phenylmercuric acetate 0.02% in suitable jelly or cream base

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(Continued from page 104)

LOUISVILLE—ATTRACTIVE, COMPREHENSIVE RESIdency training program available in Veterans Administration Hospital+ of affiliated University of Louisville Medical Center; salary range between $5,915 and $8,990 on VA Package Plan Program, depending on experience; (includes training in intensive psychotherapy, child psychiatry, neurology, teaching, and administration). Apply: Director, Professional Services, VA Hospital, Louisville, Kentucky. D

PATHOLOGY RESIDENCIES — ONE TO THREE years; Board approved; combined hospital*+ and medicolegal service; 8500 surgicals, 1300 autopsies; departments of toxicology and neuropathology; 4 full-time certified pathologists; stipend $3000 plus; 3 vacancies July 1957. Apply: Division Legal Medicine, University of Maryland Medical School, 700 Fleet Street, Baltimore 2, Maryland. D

RESIDENT CHEST DISEASES—JANUARY 1, 1957; approved hospital*+; 460 beds including 144 beds tuberculosis division and chest clinic; recent graduate; 1 year residency or equivalent preferred; must be U.S. citizen; eligible for California license; beginning salary $502 monthly, meals, and laundry. Apply: Director, Thoracic Service, Santa Clara County Hospital, San Jose, California. D

ORTHOPEDIC RESIDENCY AVAILABLE—TO GRADuates of approved medical schools July 1, 1957; at Hamot Hospital*+, Erie, Pennsylvania, a 441 bed general hospital; stipend $200 per month plus full maintenance. D

RADIOLOGY RESIDENT WANTED—400 BED GENERal hospital*+; approved 3 year program, but will accept for 1 or 2 years; start on July 1, 1957; training includes diagnostic and therapeutic radiology, also radioisotope work, pathology, and active cancer clinic; supervision 2 full time diplomate radiologists. Contact: Registrar, Medical Education, The Jewish Hospital, Cincinnati 29, Ohio. D

RESIDENCY—INTERNAL MEDICINE; 1100 BED GENeral hospital+; 3 year; 2 1st year vacancies; teaching unit, Baylor University College of Medicine; female, private, out-patient medicine; includes all subspecialties under supervision of Board certified specialists; stipend $2840-$3550; radioisotopes, research, pulmonary function etc.; citizenship required. H. D. Bennett, MD, VA Hospital, Houston, Texas. D

RESIDENCIES AVAILABLE — VETERANS ADMINIStration Hospital+; large southern medical center affiliated with Tulane University and Louisiana State University Schools of Medicine; fully approved; citizenship required; openings July 1, 1957, in internal medicine, general surgery, urology, orthopedics, ophthalmology, radiology, pathology, and psychiatry. Apply: Manager, Veterans Administration Hospital, New Orleans, Louisiana. D

ANESTHESIOLOGY RESIDENCIES — APPROVED 2 year active teaching program with unusually wide clinical experience; opportunities for clinical, teaching and research appointments in hospital and medical college after completion of training. Write: C. M. Landmesser, MD, Director of Anesthesiology, Albany Medical Center,*+ Albany, New York. D

12 APPROVED ROTATING INTERNSHIPS AVAILable—July 1957 to July 1958; excellent teaching program; affiliation with New York University—Bellevue Regional teaching plan; new 291 bed hospital*+ in fine suburban community near New York City; $125 per month plus full maintenance; limited housing for married interns. Apply: Director, Overlook Hospital, Summit, New Jersey. D

PSYCHIATRIC RESIDENCY VACANCIES—APPROVED 3 year residency in conjunction with Northwestern University Medical School; extensive training program in clinical psychology, vocational counseling, social service, and related fields; salary ranges from $2840-$3550; and for career residents $7570-$10,065; hourly commuting distance Chicago; citizenship required. Write: Manager, Veterans Administration Hospital+, Downey, Illinois. D

RADIOLOGY RESIDENCY—ONE FIRST YEAR APpointment remains open in new 800 bed general hospital, main teaching unity of medical school; 1st year stipend $3,000, 2nd $4,000, 3rd $5,000; American citizenship; starting date between November 1, and February 1, is suitable. Apply: R. Wigh, MD, Chairman, Department of Radiology, Medical College of Georgia, Augusta, Georgia. D

PATHOLOGY RESIDENCY—FULL THREE YEAR APproval anatomical pathology, 3 pathologists; 284 autopsies; 6000 surgicals; 97,000 laboratory procedures; active cytology program; Florida license not required; beginning stipend $325 per month; beautiful Florida city; available now or January 1st. Apply: Chief of Pathology, Orange Memorial Hospital+, Orlando, Florida. D

RADIOLOGY RESIDENCIES — AVAILABLE NOVEMber 1, 1956; and January 1, 1957; in new 800 bed general hospital;*+ teaching hospital unit, new medical school department of radiology; appointments made for 3 years in a service covering diagnosis, therapy, radium, isotopes. Address: Director, Department of Radiology, Parkland Memorial Hospital, Dallas, Texas. D

INTERNSHIPS—ROTATING; 8 AVAILABLE JULY 1, 1957; in 300 bed modern general hospital* AMA approved; stipend $200 per month plus full maintenance; unusual opportunity to work with Board men in all specialties and includes staff teaching and regular conferences on all services. Apply: Director, The Niagara Falls Memorial Hospital, Niagara Falls, New York. D

PATHOLOGY—FOUR YEAR APPROVED RESIDENCY in morbid anatomy and clinical pathology; approximately 7500 surgicals and 175 autopsies performed per year; staff includes 2 pathologists, full-time biochemist, microbiologist and part time hematologist. Address communications to: Dr. Tobias Weinberg, Pathologist-in-Chief, Sinai Hospital,*+ Baltimore 5, Maryland. D

APPROVED RESIDENCIES—INTERNAL MEDICINE; available quarterly, Veterans Administration Center+, Dayton, Ohio; 3-4 year program, citizenship required; affiliated and supervised by Ohio State University Medical School, salary $2840-$4000 per year; approved for benefits under Public Law 550. Apply: Dr. S. Simerman, Chief, Medical Service, VA Center, Dayton, Ohio. D

PATHOLOGY RESIDENCY — AVAILABLE JANUARY 1st; 344 bed hospital*+; 2 full time Board diplomate pathologists; 240 autopsies; 5,000 surgical pathological cases; 155,000 clinical pathological examinations; 4 year approval in clinical pathology and pathologic anatomy; $225 to $300 plus $75 allowance for maintenance per month. York Hospital, York, Pennsylvania. D

RESIDENTS WANTED—FOR RESIDENCY STARTING immediately; general rotation residency in 174 bed hospital, well-equipped in all services; U. S. citizenship, 1 year internship and eligibility for California license required; in attractive mountain, seaside resort city; salary $460 per month. Apply: To Director, County Hospital, Santa Cruz, California. D

RESIDENCY—INTERNAL MEDICINE; 1100 BED GENeral hospital+; 3 year; teaching unit, Baylor University College Medicine; female, private, out-patient medicine; includes all subspecialties under supervision of Board certified specialists; stipend $2840-$3550; radioisotopes, research, pulmonary function etc.; citizenship required. H. D. Bennett, MD, VA Hospital, Houston, Texas. D

ANESTHESIOLOGY APPROVED TWO YEAR RESIdency—250 bed community hospital*+, training in all branches of anesthesia; hospital affiliations; $1800 1st year; $3600 2nd year; full maintenance; applications accepted for July 1, 1957 and September 1, 1957. Box 2259 D, % AMA.

PEDIATRIC RESIDENCIES — ACCEPTING APPLICAtions to begin July 1, 1957; graduates of approved schools only; fully approved; supervised by Board certified specialists; stipend begins at $290 per month. Edwin B. Peel, Administrator, Georgia Baptist Hospital*+, Atlanta, Georgia. D

ANESTHESIOLOGY RESIDENCIES—AT UNIVERSITY of Minnesota Hospitals, Minneapolis Veterans Administration Hospitals and associated hospitals; an opening every 4 weeks. Address: Frederick H. Van Bergen, MD, Director of Anesthesiology, University of Minnesota Hospital, Minneapolis, Minnesota. D

FULLY APPROVED RESIDENCIES—THREE YEARS in internal medicine; 3 years in pathology, 2 year approved; all teaching by diplomates; joint program of an educational and research foundation with an accredited hospital+ in a large southwestern city. Box 2038 D, % AMA.

PATHOLOGY RESIDENCIES AND HEMATOLOGY fellowships—in Baylor University Hospital*+, Dallas, Texas; approved 4 years PA and CP under 4 certified pathologists and several PH.Ds; opportunity for research and advanced degrees; $2140 to $3900 plus. Write: Dr. J. Hill for brochure. D

FULLY APPROVED OBSTETRICS-GYNECOLOGY residency—320 bed non-sectarian, non-profit hospital+; California license or eligible; stipend $400. Apply: E. C. DeLear, Assistant Administrator, Saint Francis Memorial Hospital, 900 Hyde Street, San Francisco 9, California. D

RESIDENCIES — INTERNAL MEDICINE; 1600 BED Veterans Administration Hospital*+, Long Beach, California; 410 medical beds; Dean's Committee approval; applicants must be U.S. citizens and graduates of approved schools. Write: Director, Professional Services. D

GENERAL PRACTICE RESIDENCY — POSITION available immediately; 210 bed County hospital+; outpatient department; emergency room; $300 to $350 per month. Write to: Assistant Superintendent, Pierce County Hospital, Tacoma 8, Washington. D

(Continued on page 108)

reports of clinical studies

1 "I have used meprobamate in my general psychiatric practice since April, 1955, and believe it to be [a] drug of choice for relief of tension, anxiety and insomnia."

Lemere, F.: Northwest Med. **54**: *1098, 1955.*

2 ". . . the patient [taking Miltown] never describes himself as feeling detached or 'insulated' by the drug. He remains . . . in control of his faculties, both mental and physical, and his responsiveness to other persons is characteristically improved."

Sokoloff, O.J.: A.M.A. Arch. Dermat. in press.

3 "Of special importance is the fact that Miltown does not appear to affect autonomic balance—which in alcoholics is often unstable . . ."

Thimann, J. and Gauthier, J.W.: Quart. J. Stud. Alcohol. **17**: *19, 1956.*

4 "The [relative] absence of toxicity, both subjectively and objectively, is an important feature in favor of Miltown. In addition, there were no withdrawal phenomena noted on cessation of therapy, whether it was withdrawn rapidly or slowly."

Borrus, J.C.: J.A.M.A. **157**: *1596, 1955.*

5 "Miltown is of most value in the so-called anxiety neurosis syndrome, especially when the primary symptom is tension . . . Miltown is an effective dormifacient and appears to have . . . advantages over the conventional sedatives except in psychotic patients. It relaxes the patient for natural sleep rather than forcing sleep."

Selling, L.S.: J.A.M.A. **157**: *1594, 1955.*

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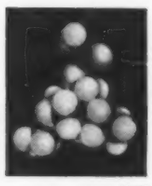

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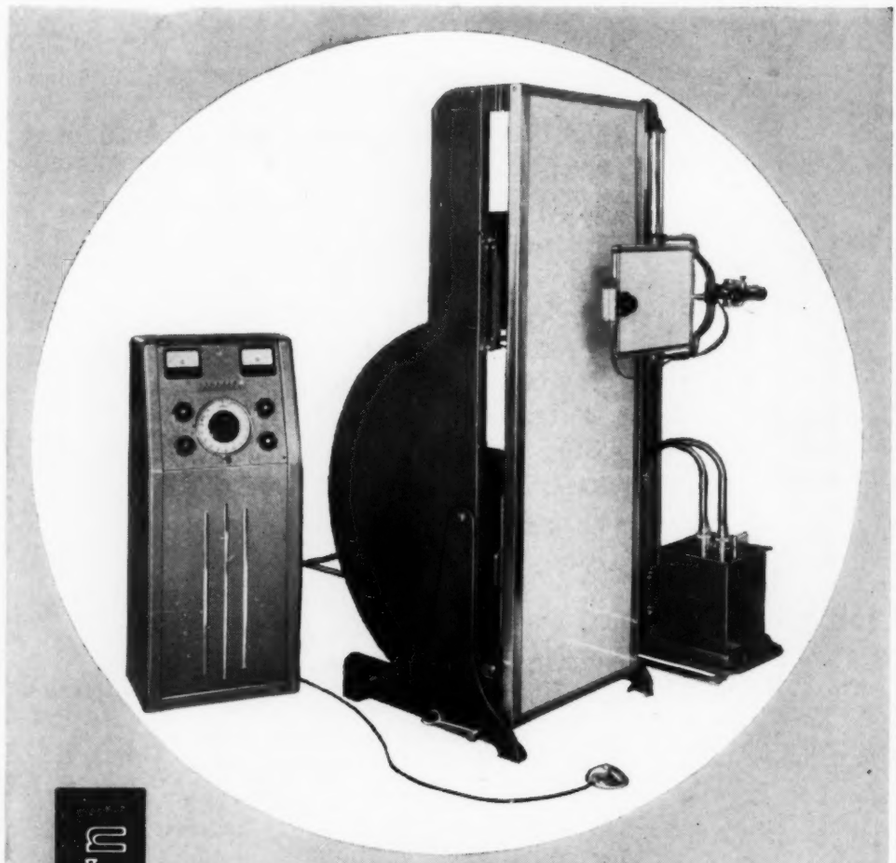

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(Continued from page 106)

PEDIATRIC RESIDENCY—IN FULLY APPROVED 100 bed pediatric hospital; teaching unit, University of Nebraska and Creighton University Schools of Medicine and their graduate schools; an active acute service; eligibility for license required. Write: Administrator, Children's Memorial Hospital, Omaha 5, Nebraska. D

ORTHOPEDIC RESIDENCY — FULLY-APPROVED program; offers senior year to orthopedic resident needing only 1 year to complete requirements for certification. Apply: Director, Professional Services, Veterans Administration Hospital,+ Brooklyn 9, New York. D

PATHOLOGY RESIDENCY AVAILABLE — JULY 1, 1957; approved AMA; clinical pathology and pathologic anatomy; stipend $300 per month. Address: Director of Laboratories, East Tennessee Baptist Hospital,*+ Knoxville, Tennessee. D

APPROVED RESIDENCIES—INTERNAL MEDICINE, 3 years; January 1, 1957 or July 1, 1957; starting $308 per month plus maintenance; AMA approved internship required. Education Director, Highland Park General Hospital*+, Highland Park 3, Michigan. D

PEDIATRIC PATHOLOGY RESIDENCIES—INCLUDES training in anatomic pathology, hematology and leukemia study; teaching hospital; available July 1, 1957. Apply: Director of Laboratories, Children's Hospital+, Washington 9, D. C. D

PATHOLOGY RESIDENCY AVAILABLE IMMEDIately—fully accredited in pathologic anatomy, forensic pathology; $125 per month plus full maintenance. Apply: Dr. G. R. Hennigar, Box 817, Medical College of Virginia*+, Richmond, Virginia. D

ANESTHESIOLOGY RESIDENTS — APPROVED 2 year residency in private hospital; full integrated teaching program; opportunity to staff appointment on completion of training; $250 monthly stipend; 1 year internship requirement. Box 2142 D, % AMA.

ANESTHESIOLOGY RESIDENCY—BOARD APproved; 380 bed hospital*+; all types of surgery; 11,000 anesthetics per year; liberal stipend. Write: Dr. Lloyd H. Mousel, Director of Anesthesia, Swedish Hospital, Seattle Washington. D

RESIDENCY IN PATHOLOGY—THREE-YEAR, APproved*+; salary $300 per month with maintenance; in Pacific Northwest city of 200,000; emphasis on teaching; 4000 surgical specimens; 200 autopsies; 120,000 clinical laboratory procedures annually. Box 2222 D, % AMA.

APPROVED RESIDENCY NOW AVAILABLE PATHOlogic anatomy—250 bed hospital*+; stipend $2100-$3000 yearly; active teaching program; pleasant surroundings. Apply: S. K. Kurland, MD, St. Anthony Hospital, 16th & Quitman, Denver, Colorado. D

RESIDENT IN PEDIATRICS—FOR APPROVED TWO year service in 700 bed general hospital*+; available immediately. Apply: Supt. San Joaquin General Hospital, Box 1890, Stockton, California. D

RESIDENT PATHOLOGIST—FOURTH YEAR MAN TO complete training in approved residency with large midwestern metropolitan hospital*+ and remain with group if satisfactory. Box 2283 D, % AMA.

RESIDENT OR INTERN—FOR GENERAL HOSPITAL; $400 monthly salary; room and laundry furnished; must be graduate of a medical school; foreign residents accepted. Lourdes Hospital, Binghamton, New York. D

ONE YEAR GENERAL SURGICAL RESIDENCY — available January 1, 1957; in 500 bed approved Ohio hospital*+; available to graduates approved schools. Box 2282 D, % AMA.

RESIDENT IN INTERNAL MEDICINE — FOR APproved 3 year service in 700 bed general hospital*+; available immediately. Apply: Supt., San Joaquin General Hospital, P. O. Box 1890, Stockton, California. D

RESIDENT IN RADIOLOGY—FOR APPROVED TWO year service in 700 bed general hospital*+; available July 1957. Apply: Supt., San Joaquin General Hospital, Box 1890, Stockton, California. D

RESIDENCIES WANTED

SURGERY—SENIOR RESIDENCY FOR COMPLETION of Board requirements; well-trained; American grade A medical school; references, university surgeons; available immediately, or later. Box 2325, % AMA.

UROLOGY — IMMEDIATELY; SENIOR RESIDENCY; being discharged from military service shortly; have 2½ years training including part of senior residency; also 2 years active urological experience with military. Box 2326, % AMA.

LOCUM TENENS WANTED

RADIOLOGIST—TO ASSIST FOR ANY GIVEN INTERval to July 1, 1957; $1200 per month; possible permanent association with increasing salary or partnership. Box 2275 G, % AMA.

SITUATIONS WANTED

SURGEON—45; MARRIED; 2 CHILDREN; TRAINING and private practice in surgery over 19 year period; capable of heading and general surgical group, clinic, etc.; military commitments completed; (Chief of Surgical Services in the States for 4 years during World War 2); licensed in Wisconsin and Minnesota at present, but prefer to locate somewhere in the West or Southwest; specialty groups include, F.I.C.S. and F.I.A.P.; desire group association or active and interesting general surgical work where my training and experience will be utilized. Box 2286 I, % AMA.

GENERAL SURGEON — BOARD QUALIFIED; 34; family; university trained; complete military obligation February, 1957; licensed in Connecticut and Maryland; desires association with individual or group. Box 2313 I, % AMA.

PEDIATRICIAN—BOARD CERTIFIED; WOMAN; 41; experienced private and consultation practice; has held clinical teaching appointment; desires teaching position or part-time consultation with group; prefer mild climate. Box 2320 I, % AMA.

SURGEON—OAO; M.S., (SURGERY); DIPLOMATE, (Surgery); 2 years, surgical assistant, very important teaching group; seeks group, association, partial research, any locality; early 30's. Woodward Medical Bureau, 185 N. Wabash, Chicago. I

GENERAL PRACTITIONER—38; CLASS A; 8 YEARS experience interest and training surgery; obstetrics-gynecology; desires association small town with hospital; licensed Illinois, Wisconsin, California. Box 2305 I, % AMA.

RADIOLOGIST — DIPLOMATE; ISOTOPE TRAINING; experienced; age 36; family; desires hospital position; would also be interested in teaching appointment. Box 2319 I, % AMA.

GENERAL SURGEON—34; MARRIED; BOARD QUALified; university hospital trained; experienced traumatic and general surgery; leaving military service; available immediately; prefers midwest. Box 2321 I, % AMA.

INTERNIST — BOARD ELEGIBLE; 32; MARRIED; medical staff university affiliated V. A. hospital; 5 years training; considerable cardiology; desires private or group affiliation; east or west coast. Box 2308 I, % AMA.

ANESTHESIOLOGIST — BOARD ELIGIBLE WITH 2 years experience; married; 3 children; desires a department or partnership; East preferred. Box 2328 I, % AMA.

GENERAL SURGEON—BOARD ELIGIBLE; 31; DEsires association with surgeon or group in California or Washington State. Box 2293 I, % AMA.

GENERAL SURGEON—36; 3 YEARS SURGICAL RESidency, 5 years surgical practice; desires preceptorship with Board surgeon or surgeon acceptable to Boards; to complete Board requirements; category IV; family; Westchester, Yonkers, Long Island preferred. Box 2197 I, % AMA.

SURGEON — FULLY QUALIFIED; IN CHARGE OF thoracic and cardiac surgery university department 5 years; extensive experience experimental surgery and perfusion techniques; seek opportunity in private practice. Box 2264 I, % AMA.

INTERNIST—BOARD ELIGIBLE; UNIVERSITY HOSpital trained; sub-specialty cardiology; Diplomate National Boards; age 35; family; desire permanent location, private practice or association, general medicine or specialty. Box 2281 I, % AMA.

OBSTETRICIAN AND GYNECOLOGIST—AVAILABLE July 1957; graduate of University of Toronto, Diplomate of National Board; New York license; 4 years specialty training; Board eligible; will consider anywhere but prefer eastern States. Box 2277 I, % AMA.

PATHOLOGIST — 36; BOARD ELIGIBLE; CLINICAL and anatomical pathology; 5 years research before residency; publications; married; prefer hospital service small or medium town in West; consider foreign position. Box 2267 I, % AMA.

(Continued on page 110)

MYSTECLIN SUSPENSION

Steclin-Mycostatin (Squibb Tetracycline-Nystatin)

Another form of the only broad spectrum antibiotic preparation with added protection against monilial superinfection

PLEASANT TASTING — Mysteclin Suspension is pleasantly fruit-flavored and will appeal to taste-conscious youngsters as well as to adults who prefer liquid medication.

BROADLY EFFECTIVE — Mysteclin Suspension provides well tolerated therapy for the many common infections which respond to tetracycline—and also acts to prevent monilial overgrowth.

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MYSTECLIN SUSPENSION: a fruit-flavored oil suspension containing the equivalent of 125 mg. Steclin (Squibb Tetracycline) Hydrochloride and 125,000 units Mycostatin (Squibb Nystatin) per 5 cc. teaspoonful. Supplied in two-ounce bottles.

Also available as Capsules (250 mg. Steclin Hydrochloride and 250,000 units Mycostatin) and Half Strength Capsules (125 mg. Steclin Hydrochloride and 125,000 units Mycostatin).

SQUIBB *Squibb Quality — the Priceless Ingredient*

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WHITE'S COD LIVER OIL CONCENTRATE TABLETS

May be chewed like candy

New Improved Formula:
White's Cod Liver Oil Tablets now provide 4,000 U.S.P. Units of Vitamin A and 400 U.S.P. Units of Vitamin D per tablet—the equivalent of one teaspoonful of U.S.P. cod liver oil.

And for your older patients: high potency
WHITE'S COD LIVER OIL CONCENTRATE CAPSULES—
12,500 Units of Vitamin A and 1250 Units of Vitamin D.

WHITE LABORATORIES, INC. **KENILWORTH, N. J.**

(Continued from page 108)

INTERNIST—CERTIFIED; COMPLETING RESIDENCY diagnostic radiology; interested gastroenterology and qualified g-i X-ray; some private practice experience; 35; hard worker, family man, churchgoer; seeks association; complete details requested. Box 2266 I, % AMA.

GENERAL PRACTITIONER—AGE 41; 9 YEARS SUCcessful solo practice; Mid-West; married; 2 children; service completed; desires relocation with surgeon, general practitioner or group; San Diego or suburbs only; California licensed. Box 2253 I, % AMA.

RADIOLOGIST—15 YEARS TUMOR CLINIC; EXTENsive radium experience; radiation physics, isotopes (including Oak Ridge) training, 2 years isotope experience; publications on cancer; desires Radiology appointment, preferably therapy. Box 1678 I, % AMA.

RADIOLOGIST—MAYO TRAINED; CERTIFIED DIAGnosis and therapy; 2½ years experience since training; married and young children; military service completed; prefer good permanent opportunity in larger town in southeast. Box 2254 I, % AMA.

OBSTETRICIAN-GYNECOLOGIST — BOARD ELIGIble; 35; completing military service; at present Air Force Major; head of obstetrics-gynecology department, large air force hospital; desires association with individual or group; Illinois preferred. Box 2235 I, % AMA.

AVAILABLE—AMERICAN BOARD SPECIALISTS TO head departments, join groups, etc.; physicians for private practice, assistants or associates, industry, public health. Please write for recommendations. Shay Medical Agency, 55 E. Washington, Chicago. I

WHEN IN NEED OF AMERICAN BOARD SPECIALists to head departments, physicians for private practice, public health or industry, please write for recommendations. Burneice Larson, Director, Medical Bureau, 900 N. Michigan Ave., Chicago. I

BOARD SURGEON AND GENERAL PRACTITIONER—In thirties; excellent qualifications; work as team; wide experience; desire relocation in area with future; income must be adequate. Box 2179 I, % AMA.

AAGP MEMBER—37; CALIFORNIA LICENSE; PRESently located in Mid-West; desires change location to California; consider purchase of small medical building. Box 2192 I, % AMA.

OBSTETRICIAN-GYNECOLOGIST — BOARD CERTIfied; assistant professor large university; desires private practice; location, association or group; married; category IV; age 33; Box 2240 I, % AMA.

ANESTHESIOLOGISTS — TWO; BOARD ELIGIBLE January 1, and July 1, 1957; desire joint or individual practices preferably in East or South; both married, in thirties; category IV. Box 2199 I, % AMA.

CLINIC MANAGER — DESIRES TO RELOCATE IN West or Mid-West; experienced, qualified man with college training. Box 2262 I, % AMA.

INTERNIST—29; MARRIED; UNIVERSITY HOSPITAL trained; desires association with group or established internist; available July 1957. Box 2224 I, % AMA.

SURGEON — 35; MARRIED; BOARD CERTIFIED; leaving government service; desires location on an individual or group basis. Box 2194 I, % AMA.

PROFESSIONAL AND TECHNICAL AIDES

WANTED—(a) CHIEF MED TECH; supv 2 other techs in active lab, 100 bd proctology hosp; to $5000; impor ige city, sev colleges; MW. (b) MED TECH; vol gen hosp 100 bds, expand'g to 200 soon; ocean resort twn; Cal. (c) 3 MED TECHS; fully apprv'd 400 bd gen hosp; city 150,000 nr univ med ctr; E. (d) LAB & XRAY TECH; vol gen hosp 25 bds, 2-man clin grp; mining, agric area, W. (e) CHIEF MED TECH; 2 path in chge of active lab, empl 12-15 med techs; 400 bd gen hosp; resid city 50,000; E. (f) BACTERIOLOGIST; priv allergy rsrch lab; $4200; lovely Fla resort city. (g) CHIEF X-RAY TECH; 1 other tech empl, 100 bd vol gen hosp; $400, overtime; Calif. (h) MED TECHS, qual Biochem, Bact; lge, well known pharm house; excep rsrch facil; coll city 60,000; MW. (i) MED TECHS; 11 man clin grp, all spec; resid suburb L.A. (j) CHIEF MED TECH, serve as ass't Bact; staff of 8 in lab, 150 bd gen hosp; city 65,000 nr impor univ city; MW Woodward Medical Personnel Bureau, 185 N. Wabash, Chicago.

MEDICAL TECHNOLOGIST, CHEMIST, BACTERIOLogist—for modern 78 bed air-conditioned company hospital located on Texas Gulf Coast; many benefits including paid vacation, sick leave, group insurance, retirement, stock purchase plan, etc.; salary commensurate with experience and ability. Contact: Dow Chemical Company, Personnel Department, Freeport, Texas, enclosing a complete resume of education, training, experience and references in first letter. L

CLINICAL LABORATORY TECHNOLOGISTS — POSItions now open in hematology, clinical chemistry, histology, and blood bank, due to expansion of facilities; 650 bed, new modern general hospital*+; 3 certified pathologists in attendance; approved school of medical technology; salary range $3700-$5200, depending on training and experience; 40 hour week, paid sick leave, paid vacation and other liberal personnel policies; pension plan; no night calls. Apply: Dr. Melvin Oosting, Director, Diagnostic Laboratories, Miami Valley Hospital, Dayton 9, Ohio. L

WANTED—ASCP REGISTERED LABORATORY TECHnicians; for 250 bed general hospital; salary open, depending on experience and training. Apply: Charles Chesner, MD Pathologist, St. Joseph Hospital, Lorain, Ohio. L

WANTED—(a) TECHS, in hematology, clinical chemistry, histology, blood bank; new gen. hosp., 700 beds; approved school for techs; approved path. res; $3700-$5200; univ. city; MW. (b) TECH; small gen. hosp; resort town, No. Calif; $375. (c) CHIEF TECH; vol. gen. hosp 500 beds; affil. med. school; lge city, E. (d) PHYSICAL THERAPIST; ass't, 2 Board surgeons; busy practice; coll. town, Midsouth. (e) TWO X-RAY TECHS; new 175 bed gen. hosp; near San Francisco. (f) Research tech; tissue metabolism research lab; B.S. or M.S. or ASCP; med. school; W. (g) Med. tech, familiar advanced procedures; office of Board internist, FACP; Wis. Medical Bureau, Burneice Larsen, 900 N. Michigan, Chicago. L

WANTED — PUBLIC HEALTH LABORATORY BACteriologist; 5 day week; start $333 monthly; County retirement system; California certificate necessary. Write to: Dr. Irena A. Heindl, P. O. Box 1607, Modesto, California. L

WANTED—ASCP REGISTERED LABORATORY TECHnician; for 250 bed general hospital; salary open. Apply: Charles Chesner, MD Pathologist, St. Joseph Hospital, Lorain, Ohio. L

HOSPITALS AND SANATORIA FOR SALE

FOR SALE OR LEASE—10 BED MODERN HOSPITAL and clinic; completely equipped; in town of 2500 within 30 minutes of Dallas, Texas; town located on 4 lane super highway; large growth area; established 6 years; excellent practice established with excellent income; owner has made enough and desires to take long overdue vacation. Box 2237 O, % AMA.

PRACTICES FOR SALE

CALIFORNIA — GENERAL PRACTICE; ORANGE County, beautiful beach resort town; grossing $15,000 after only a few years; ideal for settling down in growing area; small initial investment including equipment and facilities; available now; leaving to specialize. Write: Box 295, Newport Beach, California. P

CALIFORNIA—1/5 INTEREST IN THRIVING, WELLestablished and equipped group Los Angeles area; $1000 monthly income guarantee against percentage; minimum $10,000 down required. Box 2228 P, % AMA.

INDIANA—RECENTLY REMODELED 14 ROOM HOMEoffice combination with well-organized practice grossing $36,000; drugs and equipment included at $25,000; terms to suit. Box 2273 P, % AMA.

ILLINOIS—CHICAGO; GENERAL AND INDUSTRIAL; over $25,000 yearly income salary alone for the past 10 years $7200 yearly; new 100M.A. X-ray, EKG, BM, new green steel office equipment; retiring; price, $45,000. Box 2256 P, % AMA.

IOWA—WELL-ESTABLISHED GENERAL PRACTICE; southwest Iowa; recently remodeled home—office and good equipment; leaving to take administrative position. Write: P. L. Spencer, MD, Essex, Iowa. P

(Continued on page 112)

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Means self-powered, uniform, measured-dose inhalation therapy...

Medihaler
Means true nebulization. Each measured dose provides 5 to 8 times as many particles in the ideal size range as most conventional nebulizers...

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For Rapid Relief of Acute or Continuing Bronchospasm

Rx Medihaler-Epi™

Riker brand of epinephrine 0.5% solution in inert, nontoxic aerosol vehicle. Each ejection delivers 0.125 mg. epinephrine. In 10 cc. vial with metered-dose valve, sufficient for 200 inhalations.

Rx Medihaler-Iso™

Riker brand of isoproterenol HCl 0.25% solution in inert, nontoxic aerosol vehicle. Each ejection delivers 0.06 mg. isoproterenol. In 10 cc. vial with metered-dose valve, sufficient for 200 inhalations.

Medihaler-Epi replaces injected epinephrine in emergency situations in which respirations have not ceased. It provides rapid relief in acute food, drug, or pollen reactions (including urticaria, bronchospasm, angioneurotic edema, edema of glottis, etc.). In most instances only one inhalation is necessary.

Rx Medihaler Oral Adapter

Note: First prescription for Medihaler medications should include the desired medication and Medihaler Oral Adapter.

Oral Adapter made of hard plastic with no movable parts...foolproof...unbreakable and easily cared for by rapid rinsing...entire set, including medication, fits into neat plastic case small enough to be carried inconspicuously in pocket or purse...the smallest package for nebulization ever produced.

In Angina Pectoris

NEW Medihaler-Nitro™

Medihaler-Nitro is 1% octyl nitrite in nebulization form. Outstanding for the emergency relief of acute anginal pain. Each inhalation delivers precisely 0.25 mg. of octyl nitrite. By using the lungs as the most direct portal of entry, faster relief than from orally administered drugs is assured because of proximity of pulmonary and coronary circulations. Faster-acting than nitroglycerin and notably unburdened by undesirable side actions.

Only one or two inhalations necessary. One full minute should elapse between inhalations. In 10 cc. Medihaler bottle with metered-dose valve.

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PHYSICIANS CASUALTY AND HEALTH ASSOCIATIONS
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SINCE 1902

(Continued from page 110)

MISSOURI — EENT; LONG ESTABLISHED, UNOPposed practice in pleasant college town 12,000; spacious, equipped 6 rooms with surgical facilities; modest lease; good hospital; retiring; reasonable; terms. Box 2317 P, % AMA.

NEW JERSEY—GENERAL PRACTICE IN A RAPIDLY growing small town 50 miles from New York City; established 10 years; home office combination and equipment for sale; will introduce; specializing. Box 2198 P, % AMA.

NEW JERSEY—MORRISTOWN AREA; HOME, OFfice and practice; established medical and surgical, rapidly growing residential community; furnishings and equipment optional; will introduce. Box 2303 P, % AMA.

NEW JERSEY — OFFICE AND HOME FOR SALE; Delaware Valley; physician needed; expanding residential community 25 miles north of Philadelphia; especially suitable general practice or pediatrics. Contact: Earl Main, 7 Skytop Road, Metuchen, New Jersey. P

NEW JERSEY—SOUTHERN; LUCRATIVE EYE, EAR, nose and throat practice; established 10 years; gross $25,000 or better; home and equipment available if desired; rented office, center town. Box 2309 P, % AMA.

NEW YORK—WESTERN; GENERAL PRACTICE FOR sale; well-established in combination with fully furnished house; 5 years old; low overhead; open hospital 4 miles; $5000 cash; balance out of income; wonderful opportunity for younger man; reason for sale: retirement. Box 2195 P, % AMA.

OREGON — GENERAL PRACTICE; 10,000 POPULAtion; near hunting, fishing; grossed $38,000 with most surgery referred although surgical and hospital privileges available; lease on modern complete office; specializing; will introduce or temporarily associate. Write: Box 2300 P, % AMA.

OREGON — GENERAL PRACTICE; MODERN COMpletely equipped office; excellent opportunity for young industrious physician; gross $48,000 in 1955; leaving to specialize. Box 2302 P, % AMA.

PENNSYLVANIA—FOR SALE DUE TO DEATH; LONG established general surgical practice in downtown Pittsburgh; well-furnished office includes medical and laboratory equipment; complete files available. Box 2279 P, % AMA.

PENNSYLVANIA—SALE, ACTIVE, LUCRATIVE, OPHthalmological practice; growing community 100,000, near hunting, fishing; available immediately; well-equipped, air-conditioned, modern office, good location; eye service, new hospital; unusual opportunity; no opposition. Box 2265 P, % AMA.

VIRGINIA — ESTABLISHED EAR, NOSE AND throat practice; in metropolitan area; family demands force splitting of 2-city practice with complete equipment; will introduce, remain associated as desired; terms. Box 2164 P, % AMA.

APPARATUS, ETC., FOR SALE

EQUIPMENT FOR SALE—FROM THE ESTATE OF Doctor Thomas Quinn; microscope, examining table, diathermy, a small X-ray, and cabinets, also health meter scales; his son Dr. Thomas W. Quinn, will be here Thanksgiving week. Mrs. Thomas Quinn, 504 Welsted St., Napoleon, Ohio. Q

PRACTICALLY NEW—BURDICK EK 2 DIRECT REcording electrocardiograph; cost $750; sell for $495; also, Pelton HP 2 autoclave, 8" x 16" chamber; cost $450; sell for $250. Box 2306 Q, % AMA.

BRAND NEW SURPLUS—14 X 17 BUCK CASSETTES with mid-speed screens, $42; lead lined storage chests, mobile, gray hammertone, $37. Price F.O.B. New York. Medical Salvage Co., Inc., 217 E. 23rd Street, New York, New York. Q

FOR SALE—AT 40-50% OF COST; SEVEN ROOMS complete office equipment including steel-line sets, X-ray, EKG, autoclave, microscope, Gradwohl table, etc.; St. Joseph, Missouri. Box 2193 Q, % AMA.

LARGE STOCK NEW, USED EQUIPMENT; INSTRUments; available for physician, hospital, or laboratories. Harry Wells, 400 E. 59th St., New York 22, New York.

FOR RENT

WHY NOT—START YOUR PRACTICE IN THE FAST growing community of Escondido, the gem of Southern California; have 100 x 129 ft. corner located in hospital and clinic district of down town Escondido; will build to suit for right party on long term lease, at reasonable rental. Don't delay, write or phone: Gordon, P. O. Box 1216, Escondido, California, Sherwood 5-1247. T

NEW MEDICAL CENTER—URGENT NEED FOR PEdiatrician; Lake Bluff area; residential area 35 miles north of Chicago; hospital nearby; now leasing suite in new one story completely air conditioned medical center to be completed March 1, 1957; ample parking; local druggist will cooperate. Stuart, 33 Scranton, Lake Bluff, Ill. T

NEW, MODERN DUPLEX MEDICAL BUILDING — ready in 2 weeks, rent 1 or both units; rapid growing area without doctor; 5 minutes to Sarasota Hospital and beaches. A. A. Edwards, 2030 Oak Terrace, Sarasota, Florida. T

FULLY EQUIPPED MODERN OFFICE—X-RAY, LABoratory, operating room, recovery room; ideal for specialists; choice location; reasonable rent; established 38 years. Box 2315 T, % AMA.

PHYSICIAN — NEW YORK LICENSED; GENERAL practitioner in rural area; growing community; 20 minutes from New York City; will build office to doctor's specifications. Box 2311 T, % AMA.

REAL ESTATE FOR SALE

BEAUTIFUL HOME AND OFFICE FOR SALE—EXcellent opportunity to take over active general practice; doctor going to specialize. For further information call: Atlantic City 4-0575, Atlantic City, New Jersey. X

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† Data calculated from: Watt, B. K. et al., U. S. Dept. Agric. Handbook No. 8, 1950; and Burger, M. et al., Agr. & Food Chem. 4:418, 1956.

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Creatinine in Blood
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Icterus Index (Pigford)
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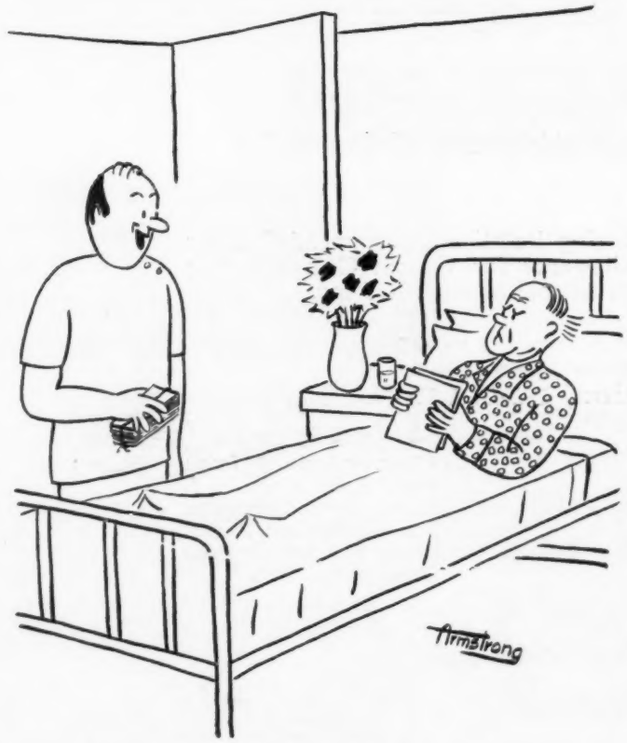

"Cheer up, Senator, the mail is running almost two to one in favor of your recovery!"

"Every one has a good word for this one. I'd rather not repeat it, though."

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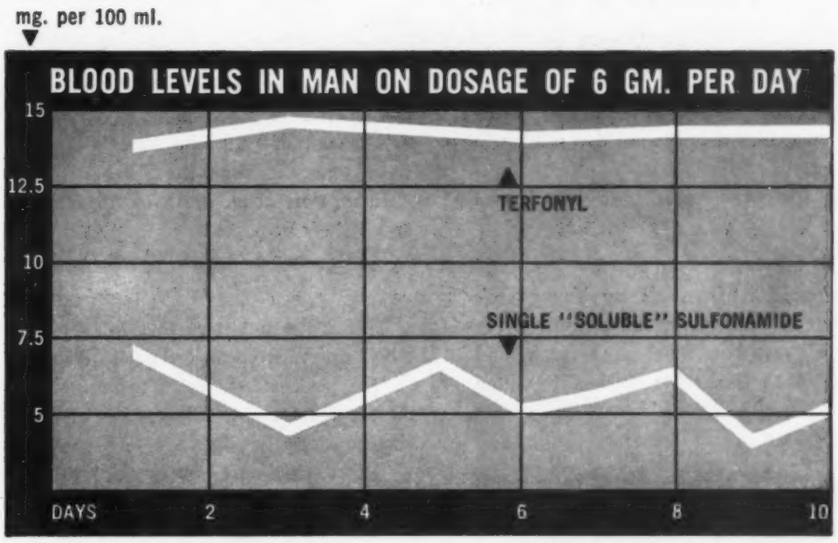

– After Lehr, D., Modern Med. 23:111 (Jan. 15) 1955.

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The Bright Side

by E. K. H.

It was at a Civil Defense meeting in a western city and the subject under discussion was how to protect the city's homes in case of a bombing attack. After a long talk about the various ways that people in the fringe areas could survive, the speaker concluded:

"However, if you are directly under the falling bomb, you'd have no chance at all."

A man seated in the first row turned pale and began to tremble.

"Good Heavens, man, what are you worrying about?" pooh-poohed the speaker. "Do you realize chances are five million to one that you will be the victim?"

"Oh, yeah?" replied the unhappy man. "Last year I won the Irish Sweepstakes!"

✣

Here's the inside story, straight from Henny Youngman's mouth, about why he no longer bets on the horses.

"The last horse I played," says he, "finished so far behind that by the time he got back to the stable he had to tiptoe into his stall to keep from waking the others."

✣

Jimmy Walker, the late mayor of New York, in a press interview boasted that he had come up the hard way, having spent his childhood in the toughest part of the big city.

"What do you mean, tough?" asked a reporter.

"Well," said Jimmy, "in our neighborhood any cat with a tail was strictly from the other side of town."

✣

The drunk at the far end of a bar was arguing vociferously with a fellow standing beside him. "You're so smart," he muttered. "Didja know the female crocodile lays 985 eggs every October?"

"Frankly," said the other, "I'm not very interested in female crocodiles."

"Izzat so?" snorted the lush. "Well, didja know that the *male* crocodile eats 972 of those eggs every November?"

"Look, friend," said the other gently. "I'm not interested in male crocodiles, either."

The drunk looked at him scathingly. "Y'should be," he said. "If it wasn't for them you'd be up to your ears in crocodiles."

✣

The late, immortal W. C. Fields came to work at the studio one morning suffering from a monumental hangover. Finally the throbbing became unbearable and Fields called over the assistant director.

"My friend, will you please get me a couple of aspirins—and hurry!"

"I happen to have some right on me," said the chap, and brought forth a small tin box.

"Thank you, my friend," groaned Fields. Then, as the fellow started to close the box, the nerve-shattered comedian covered his ears and winced. "Please," he cried, "*don't* snap the lid!"

"It's a funny thing, a fellow can get up in the morning feeling absolutely great. He knows he can lick the world—till he tries to unknot his pajama strings."

✣

If you're troubled by the noise in your car, says Tennessee Ernie, let her drive.

✣

We've just heard of a little Connecticut 8-year-old who's destined to go far in life. A neighbor of his opened the door one evening recently and was faced with the little character complete with tramp clothes and bulbous-nose mask.

"Trick or Treat!" cried a voice she recognized.

"Why for heaven's sake, Johnny, you've got your dates all wrong," she said. "Halloween isn't until next week."

"I know," was the answer. "But there's so much competition then."

✣

A Midwestern editor called the cub reporter in for his first assignment. "The president of Pinnacle Petroleum is speaking at Convention Hall," he said. "Run over and get me a typewritten copy of his address."

In no time at all the ambitious boy was back with a neatly typed sheet of paper:

"232 Belmont Ave., Chicago, Ill."

✣

This is the sad story told to us about a well-known actress who suffered from an inferiority complex.

"I'm terrible!" she cried to her analyst. "I can't sing, I can't dance, I can't act, I have no personality, I don't belong in show business."

"Well, why don't you quit?" suggested the doctor.

"Quit?" cried the actress. "I'm the *star*!"

"Will you give us one who doesn't cry?"

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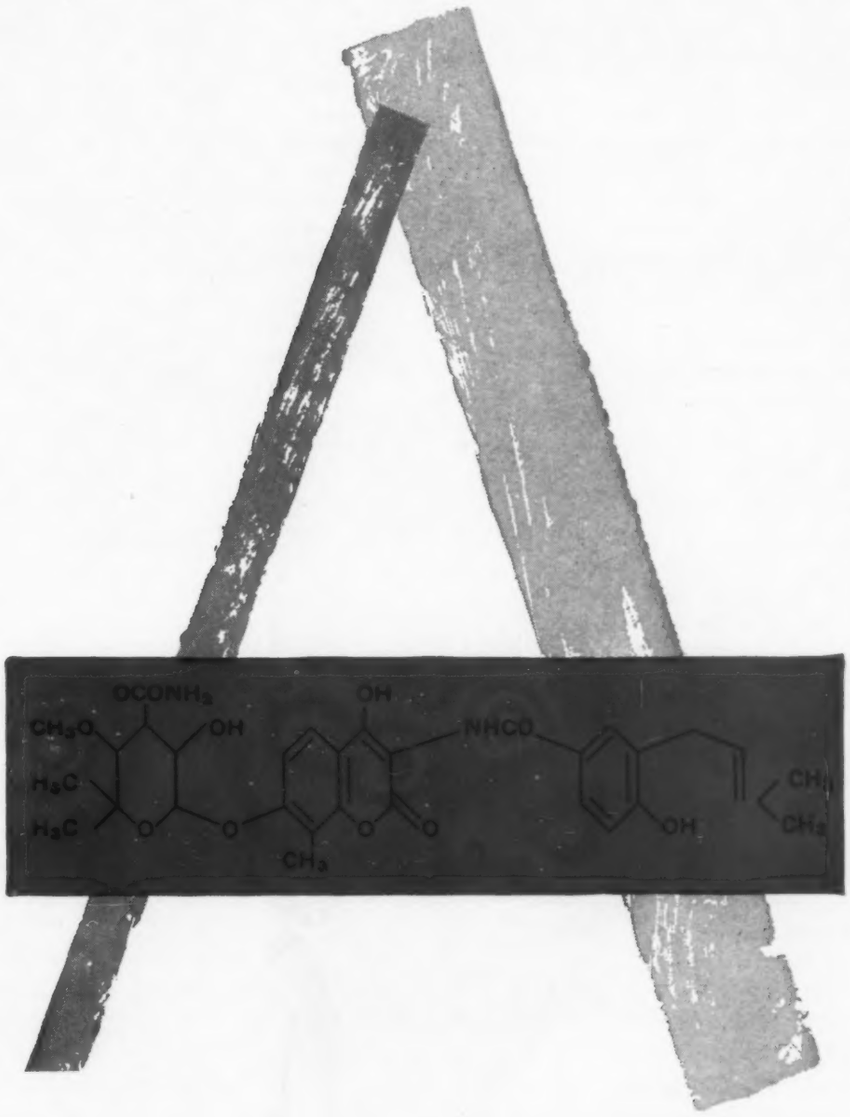
this structural formula was known and published* before the product was released to the medical profession. The antibiotic is ALBAMYCIN†. It is most effective where the broad-spectrums most often fail—against the treacherous Staph. and Proteus. It is available for your Rx now in 250 mg. capsules, bottles of 16. The usual adult dosage is only 2 capsules every 12 hours.



*By Upjohn research personnel, in the Journal of the American Chemical Society, May 5, 1956.

†Trademark, Reg. U. S. Pat. Off.—
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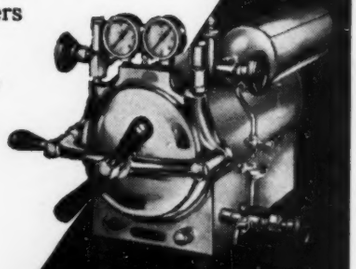

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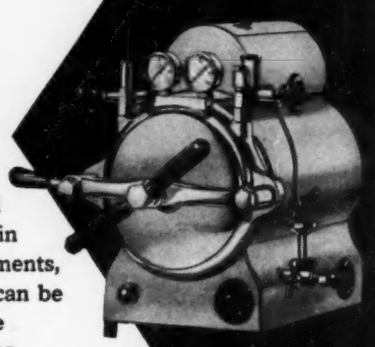

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†"The Management of Viral Hepatitis," by Hyman J. Zimmerman, M. D., Journal of American Academy of General Practice, June 1955

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BOOKS RECEIVED

Books received by THE JOURNAL *are acknowledged in this column. Selections will be made for more extensive review in the interests of* THE JOURNAL *readers as space permits. Books listed in this department are not available for lending or sale through the American Medical Association.*

Clinical Roentgenology. Volume IV: The Digestive Tract, the Gall Bladder, Liver and Pancreas, the Excretory Tract and Special Studies Emphasizing Differential Considerations. By Alfred A. de Lorimier, M.D., Radiologist, Saint Francis Memorial Hospital, San Francisco, Henry G. Moehring, M.D., Radiologist, Duluth Clinic, Duluth, Minnesota, and John R. Hannan, M.D., Radiologist, Cleveland. Cloth. $24.50. Pp. 676, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

Allgemeine und spezielle chirurgische Operationslehre. Begründet von Martin Kirschner. Herausgegeben von N. Guleke und R. Zenker. Band 10: Die Operationen an den Extremitäten. Von Werner Wachsmuth, o.ö. Professor der Chirurgie, chirurgische Universitätsklinik und -Poliklinik Würzburg. Teil 1: Allgemeiner Teil und die Operationen an der oberen Extremität. Teil 2: Die Operationen an der unteren Extremität. Second edition. Cloth. 580 marks. Pp. 616, with 797 illustrations; 641, with 660 illustrations. Springer-Verlag, Reichpietschufer 20, (1) Berlin W. 35 (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, Germany, 1956.

The Psychology of Sex Offenders. By Albert Ellis, Ph.D., and Ralph Brancale, M.D. With collaboration of Ruth R. Doorbar. Publication number 297, American Lecture Series, monograph in Bannerstone Division of American Lectures in Public Protection. Edited by Le Moyne Snyder, M.D, Medicolegal Consultant, Lansing, Michigan, et al. Cloth. $3.75. Pp. 132. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

Chemosurgery in Cancer, Gangrene and Infections: Featuring a New Method for the Microscopically Controlled Excision of Cancer. By Frederic E. Mohs, B.Sc., M.D., Associate Professor of Chemosurgery, Department of Surgery, University of Wisconsin Medical School, Madison. Cloth. $13.50. Pp. 305, with 225 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

Clues in the Diagnosis and Treatment of Heart Disease. By Paul D. White, M.D. Publication number 295, American Lecture Series, monograph in Bannerstone Division of American Lectures in Circulation. Edited by Irvine H. Page, M.D., and A. C. Corcoran, M.D. Second edition. Cloth. $5.50. Pp. 190, with 40 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

The Dental Treatment of Maxillo-Facial Injuries. By Sir William Kelsey Fry, C.B.E., M.C., M.D.S., Consulting Dental Surgeon to Royal Air Force, and Terence Ward, M.B.E., F.D.S, R.C.S., Consulting Dental Surgeon to British Army. Second edition. Cloth. $9.50. Pp. 372, with 383 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1956.

Postural and Relaxation Training in Physiotherapy and Physical Education. By John H. C. Colson, F.C.S.P., M.S.R.G., M.A.O.T., Principal, School of Remedial Gymnastics and Recreational Therapy, Pinderfields Hospital, Wakefield, West Riding, Yorkshire, England. Forword by J. M. P. Clark, M.B.E., M.B., Ch.B. Cloth. $2.50. Pp. 105, with 42 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Whitefriars Press Ltd., London and Tonbridge, England, 1956.

(Continued on page 124)

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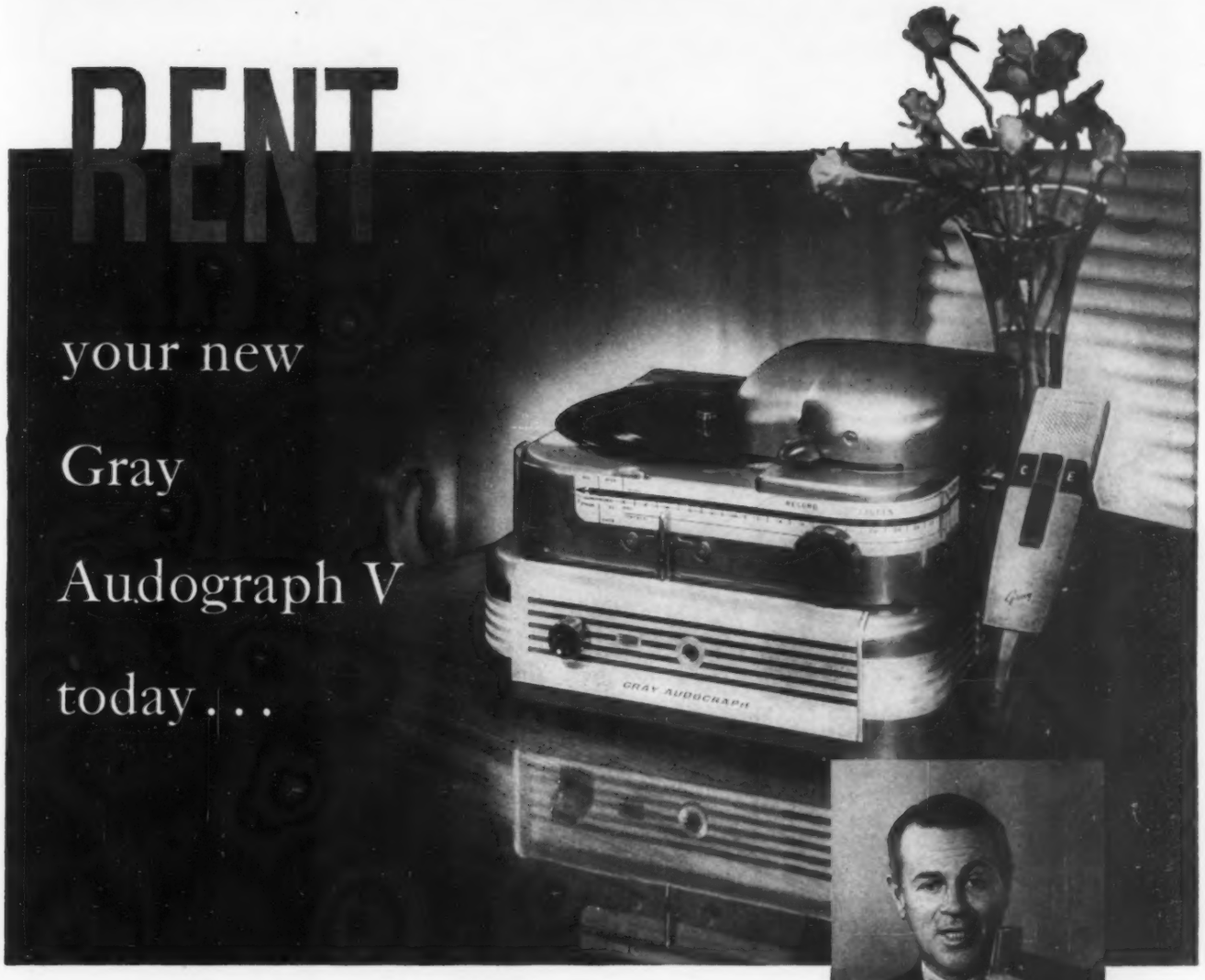

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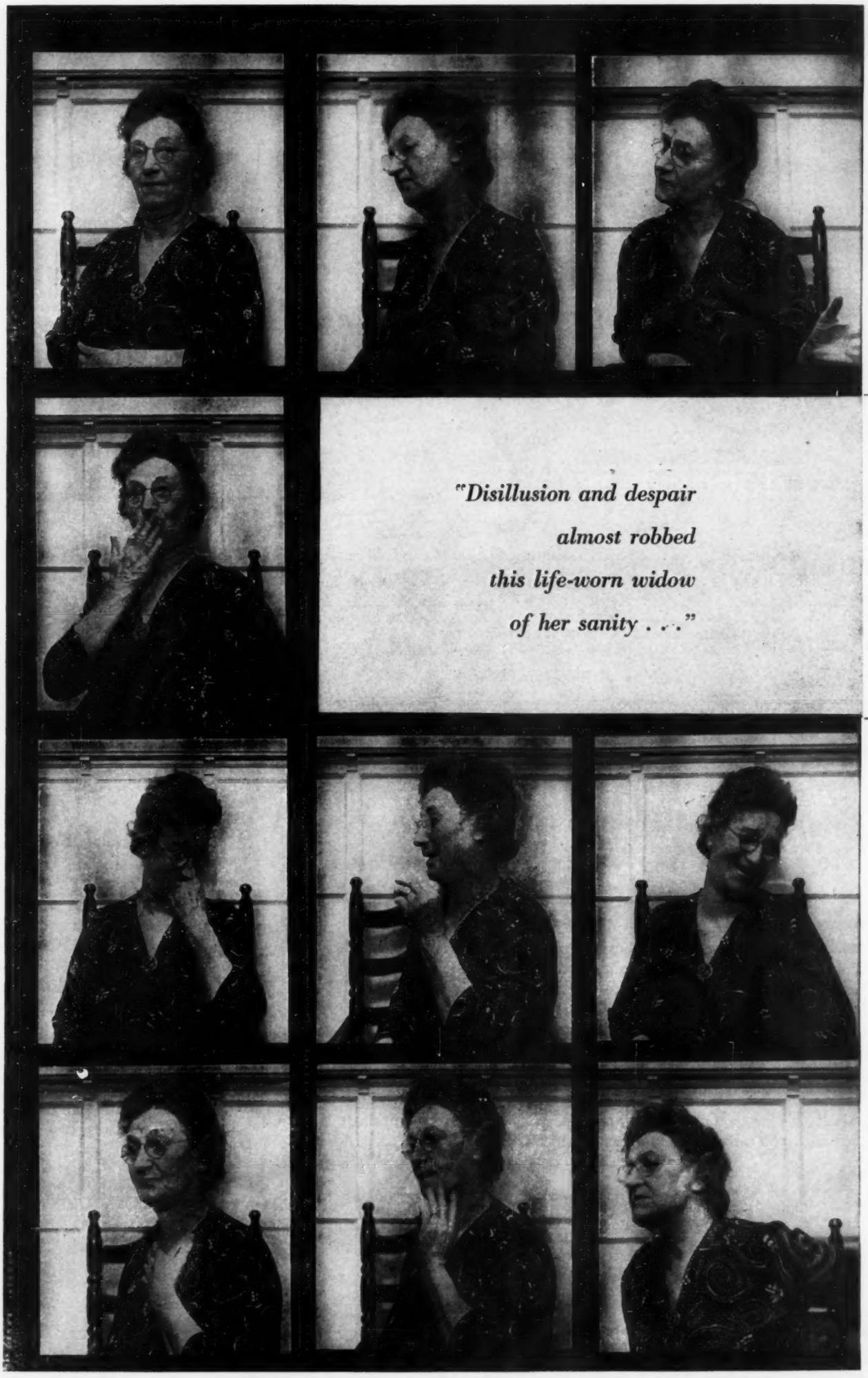
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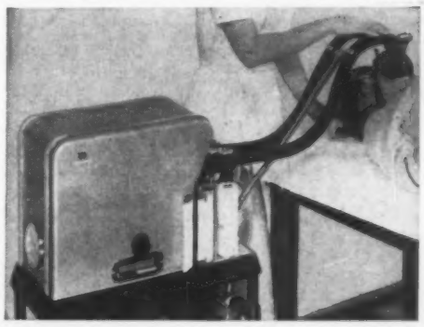

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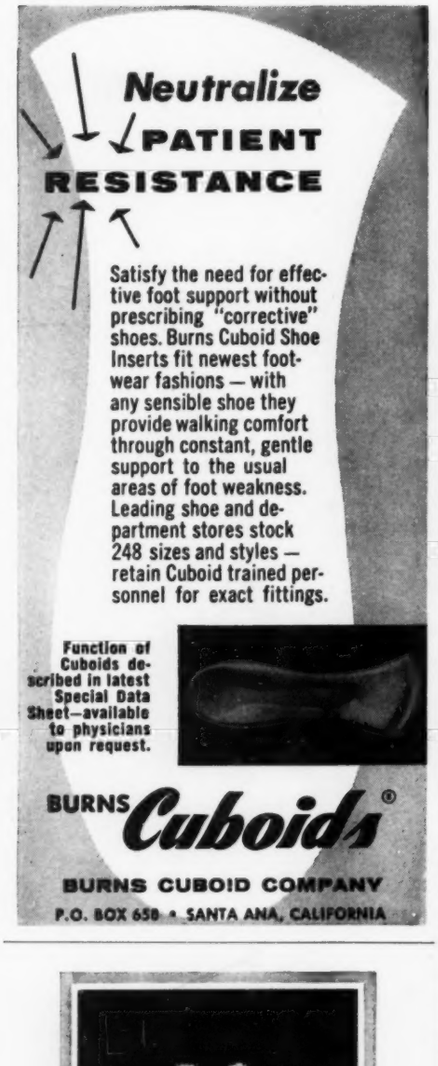
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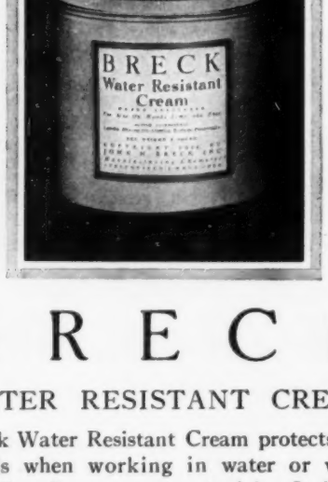

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History of the Second World War: United Kingdom Medical Series. Editor-in-Chief: Sir Arthur S. MacNalty, K.C.B., M.A., M.D. The Army Medical Services: Campaigns. Volume I: France and Belgium, 1939-1940, Norway, Battle of Britain, Libya, 1940-1942, East Africa, Greece, 1941, Crete, Iraq, Syria, Persia, Madagascar, Malta. By F. A. E. Crew, F.R.S. Cloth. 75s. Pp. 637, with 121 illustrations. Her Majesty's Stationery Office, P. O. Box 569, London, S.E.1, England, 1956.

Operative Surgery. Volume One: Introductory; Surgery of Trauma; Abdomen [Part]. Under general editorship of Charles Rob, M.C., M.Chir., F.R.C.S., Professor of Surgery, St. Mary's Hospital, London, and Rodney Smith, M.S., F.R.C.S., Surgeon, St. George's Hospital, London. [To be in 8 volumes.] Cloth. $19.50 per volume. Pp. 141, with illustrations. Butterworth & Co., Ltd., 88 Kingsway, London, W.C.2; 1367 Danforth Ave., Toronto 6, Canada; [F. A. Davis Company, 1914-16 Cherry St., Philadelphia 3], 1956.

Official History of the Canadian Medical Services, 1939-1945. Volume I: Organization and Campaigns. Edited by W. R. Feasby, B.A., M.D., Lieutenant-Colonel, R. C. A. M. C., Supplementary Reserve. Published by authority of Minister of National Defence. Cloth. $5. Pp. 568, with illustrations; maps drawn by Captain C. C. J. Bond. Edmond Cloutier, C.M.G., A.O., D.S.P., Queen's Printer and Controller of Stationery, Ottawa, Canada, 1956.

Minimal Pulmonary Tuberculosis Found by Mass Radiography (Fluorography). Report to Prophit Committee, Royal College of Physicians, by V. H. Springett, M.D., M.R.C.P., and including results of work done by A. J. Eley, M.A., M.B., B.S., Director, Ministry of Health Mass Radiography Unit, London. Cloth. 42s. Pp. 233, with 81 illustrations. H. K. Lewis & Co., Ltd., 136 Gower St., London, W.C.1, England, 1956.

Bericht über die 6. Jahresversammlung der Weltvereinigung für psychische Hygiene, Wien 16-22. August 1953. Redaktion: Österreichische Gesellschaft für psychische Hygiene. Paper. $3.50. Pp. 149, with 3 illustrations. Verlag für medizinische Wissenschaften Wilhelm Maudrich, Spitalgasse 1 b, Vienna IX; Bonn, Austria; [Intercontinental Medical Book Corporation, 381 Fourth Ave., New York 16], 1956.

Die Phenothiazinderivate in der inneren Medizin—zur Anwendung der sogenannten "Winterschlafmittel." Von Dr. med. Hellmuth Kleinsorge, Professor mit Lehrstuhl für innere Medizin, und Dr. med. Klaus Rösner, Oberarzt der medizinischen Universitäts-Poliklinik für innere und Nervenkrankheiten, Jena. Paper. 9.60 marks. Pp. 114. VEB Gustav Fischer Verlag, Villengang 2, Jena, Germany, 1956.

Diabetes Mellitus: Handbook for Physicians. By Howard F. Root, M.D., Sc.D., F.A.C.P., Medical Director of Joslin Clinic, Boston, and Priscilla White, M.D., Sc.D., F.A.C.P., Instructor in Pediatrics, Tufts University, Boston. Cloth. $7. Pp. 346, with 6 illustrations. Landsberger Medical Books, Inc., distributed solely by Blakiston Division of McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36, 1956.

Trente exposés sur des sujets actuels d'endocrinologie. Publiés sous la direction de Jacques Decourt, professeur à la Faculté de médecine de Paris, et Gilbert-Dreyfus, professeur agrégé à la Faculté de médecine de Paris. Avec la collaboration de M. Albeaux-Fernet et al. Paper. 2800 francs. Pp. 394, with illustrations. Masson & Cie, 120 Blvd. Saint-Germain, Paris 6e, France, 1956.

Bases physiologiques de la chirurgie neuro-vasculaire: Enervations sympathiques, assistance mutuelle des territoires vasculaires. Par Charles Mentha, privat-docent à la Faculté de médecine de Genève. Préface du Pr René Leriche. Paper. 1000 francs. Pp. 149, with 32 illustrations. Masson & Cie, 120 Blvd. Saint-Germain, Paris, 6e, France, 1956.

Clinical Pathology: Application and Interpretation. By Benjamin B. Wells, M.D., Ph.D., Director of Clinical Investigation, Lynn Clinic, Detroit. Second edition. Cloth. $8.50. Pp. 488, with 25 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1956.

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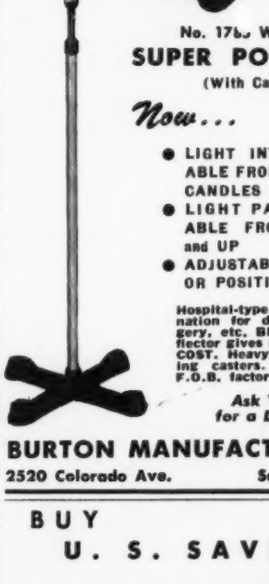

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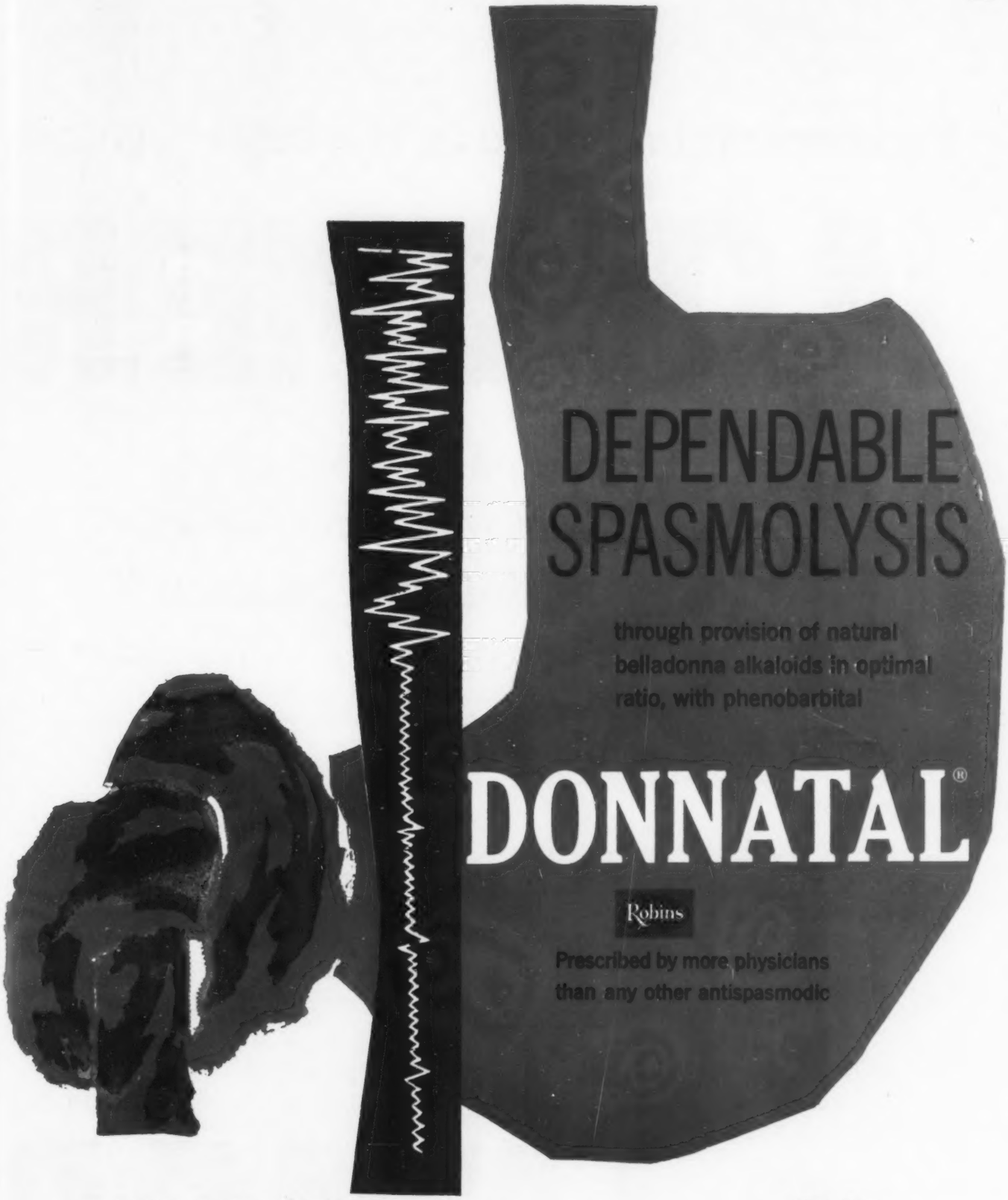

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References:
1. Moyer, J. H., et al.: Drug Therapy of Hypertension: Preliminary Observations on the Clinical Use of Mecamylamine (A Ganglionic Blocking Agent) in Combination with Rauwolfia for the Treatment of Hypertension, Med. Rec. & Ann. *49*:390 (Sept.) 1955.
2. Sturgis, C. C., et al.: Advances in Internal Medicine, J. Michigan M. Soc. *55*:154 (Feb.) 1956.

*In this clinical trial all patients were given, in addition to one of the ganglionic blocking agents, a constant daily amount of reserpine.

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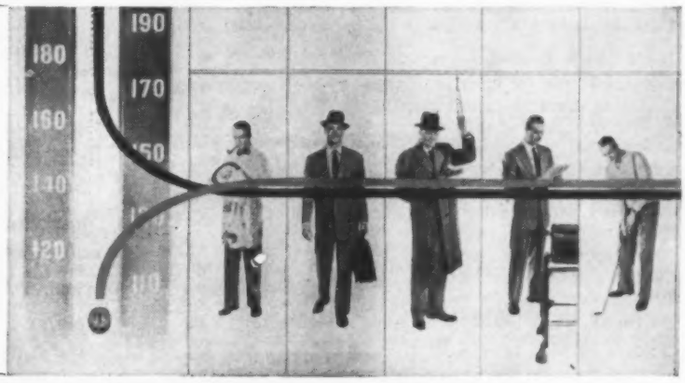

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El brownismo en México: Un estudio crítico, seguido de la primera edición de la versión castellana que hizo en México hacia 1800, el doctor Don Luis José Montaña, de los Elementos de medicina del doctor Juan Brown. Por J. J. Izquierdo. Paper. Pp. 312. Imprenta Universitaria, Bolivia 17, México, D.F., 1956.

Tumeurs humaines: Histologie, diagnostics et techniques. Par P. Masson, professeur à l'Université de Montréal. Second edition. Cloth. 10000 francs. Pp. 1214, with 462 illustrations. Librarie Maloine, Société anonyme d'éditions médicales et scientifiques, 27, rue de l'École-de-Médecine, Paris 6e, France, 1956.

Stuttering: Significant Theories and Therapies. By Eugene F. Hahn. Second edition prepared by Elise S. Hahn. Cloth. $4. Pp. 180. Stanford University Press, Stanford, Calif.; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, England, 1956.

Gathercoal and Wirth Pharmacognosy. By Edward P. Claus, Ph.D., Professor of Pharmacognosy and Head of Department, University of Pittsburgh School of Pharmacy, Pittsburgh. Third edition. Cloth. $12.50. Pp. 731, with 307 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1956.

Hémodynamique rénale. Par P. Mériel, professeur à la Faculté de médecine de Toulouse, F. Galinier, S. Ribaut et J.-M. Suc, interne des hôpitaux de Toulouse. Paper. 1500 francs. Pp. 159, with 24 illustrations. Gaston Doin & Cie, 8 place de l'Odéon, Paris 6e, France, 1956.

Concise Anatomy. By Linden F. Edwards, Ph.D., Professor of Anatomy, Ohio State University, Columbus. Second edition. Cloth. $7.50. Pp. 502, with 319 illustrations. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C.4, England, 1956.

Neurocirugía: Publicaciones y trabajos científicos. Volumen XIII, Universidad de Chile y Servicio nacional de salud. Instituto de neurocirugía e investigaciones cerebrales. Paper. $3000 m/ch; US $15. Pp. 340, with illustrations. Santiago, Chile, 1956.

The Evolution of Human Nature. By C. Judson Herrick. This book is published with assistance of Dan Danciger Publication Fund. Cloth. $7.50. Pp. 506, with 16 illustrations. University of Texas Press, Austin 12, 1956.

Essentials of Histology. By Margaret M. Hoskins, Ph.D., and Gerrit Bevelander, Ph.D. Third edition. Cloth. $4. Pp. 254, with 148 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1956.

Otolaryngology. Edited by George Morrison Coates, Harry P. Schenck and M. Valentine Miller. Revised pages for vols. I, II, III and V. Paper, loose-leaf. Various pagination. W. F. Prior Co., Inc., P. O. Box 250, Hagerstown, Md., 1956.

A Practical Manual of Medical and Biological Staining Techniques. By Edward Gurr, F.R.I.C., F.R.M.S., F.L.S. Second edition. Cloth. $6.25. Pp. 451. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, 1956.

Five Hundred over Sixty: A Community Survey on Aging. By Bernard Kutner, David Fanshel, Alice M. Togo and Thomas S. Langner. Cloth. $4. Pp. 345. Russell Sage Foundation, 505 Park Ave., New York 22, 1956.

Educating Spastic Children: The Education and Guidance of the Cerebral Palsied. By F. Eleanor Schonell, M.A., Ph.D. Cloth. $6. Pp. 242, with illustrations. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1956.

Directory of Members American Society of Anesthesiologists, Inc. Paper. Pp. 180. American Society of Anesthesiologists, Inc., 188 W. Randolph St., Chicago 1, 1956.

Primer seminario de educación médica en Colombia. Ponencias, discusiones y recomendaciones de la Comisión de patología, Cali, diciembre, 1955. Paper. Pp. 162. Cali, Colombia, S. A., 1956.

1957 Admission Requirements of American Medical Colleges. Paper. $2. Pp. 193. Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1, 1956.

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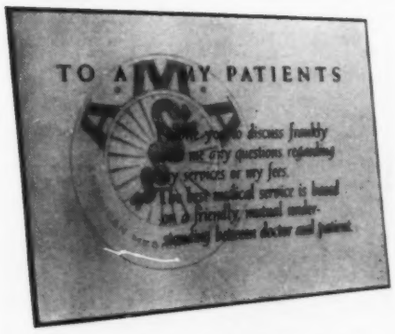

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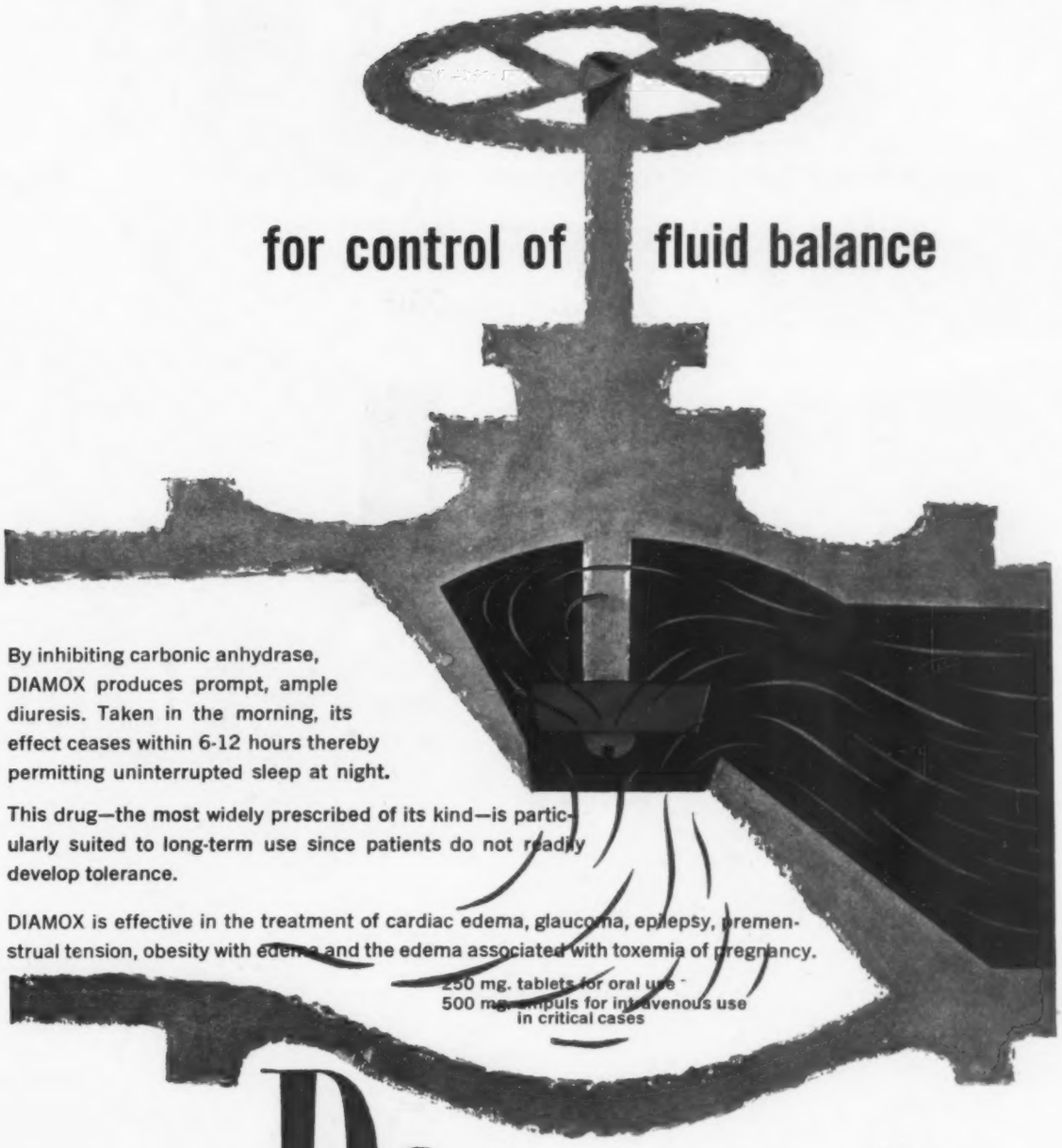

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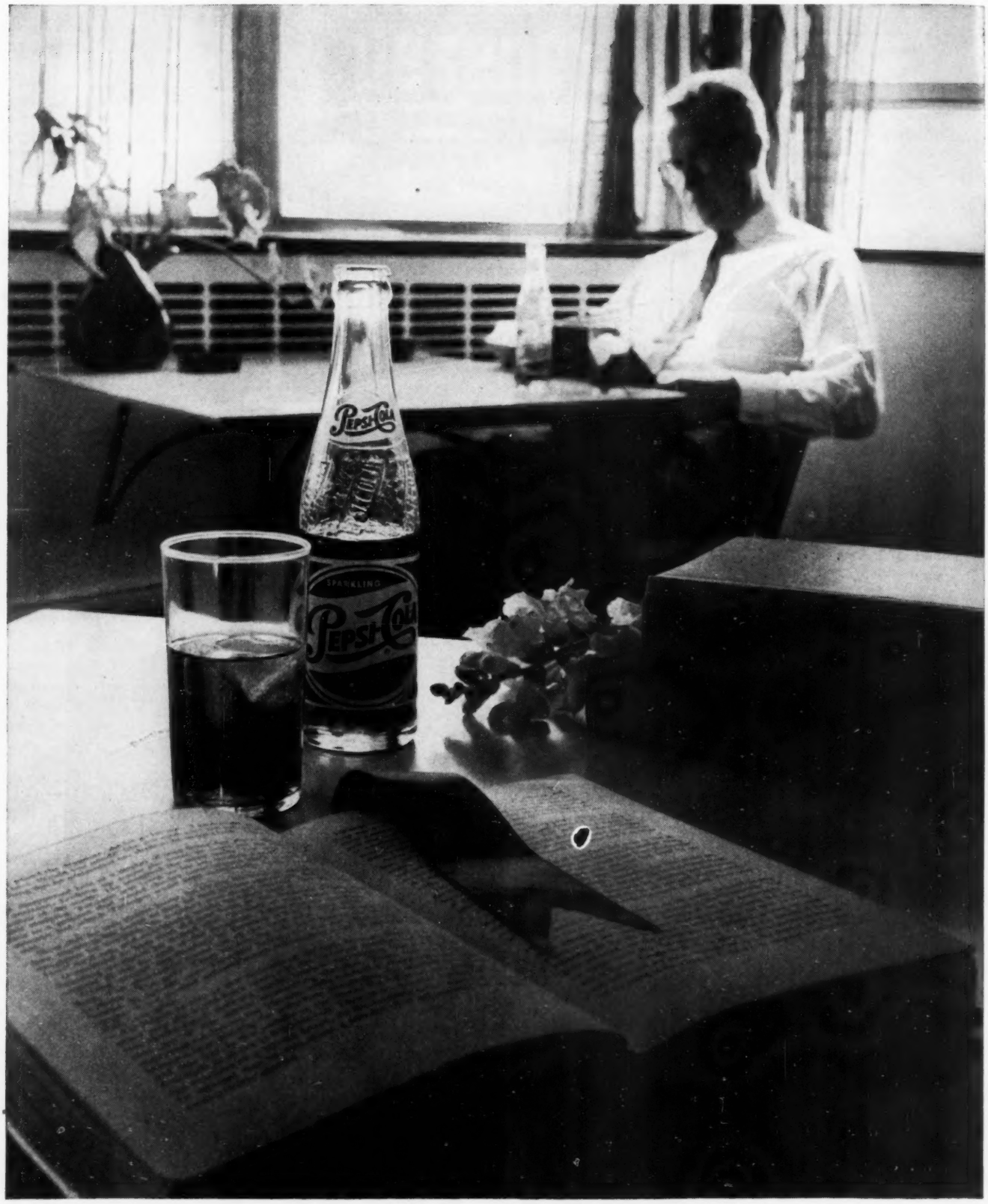

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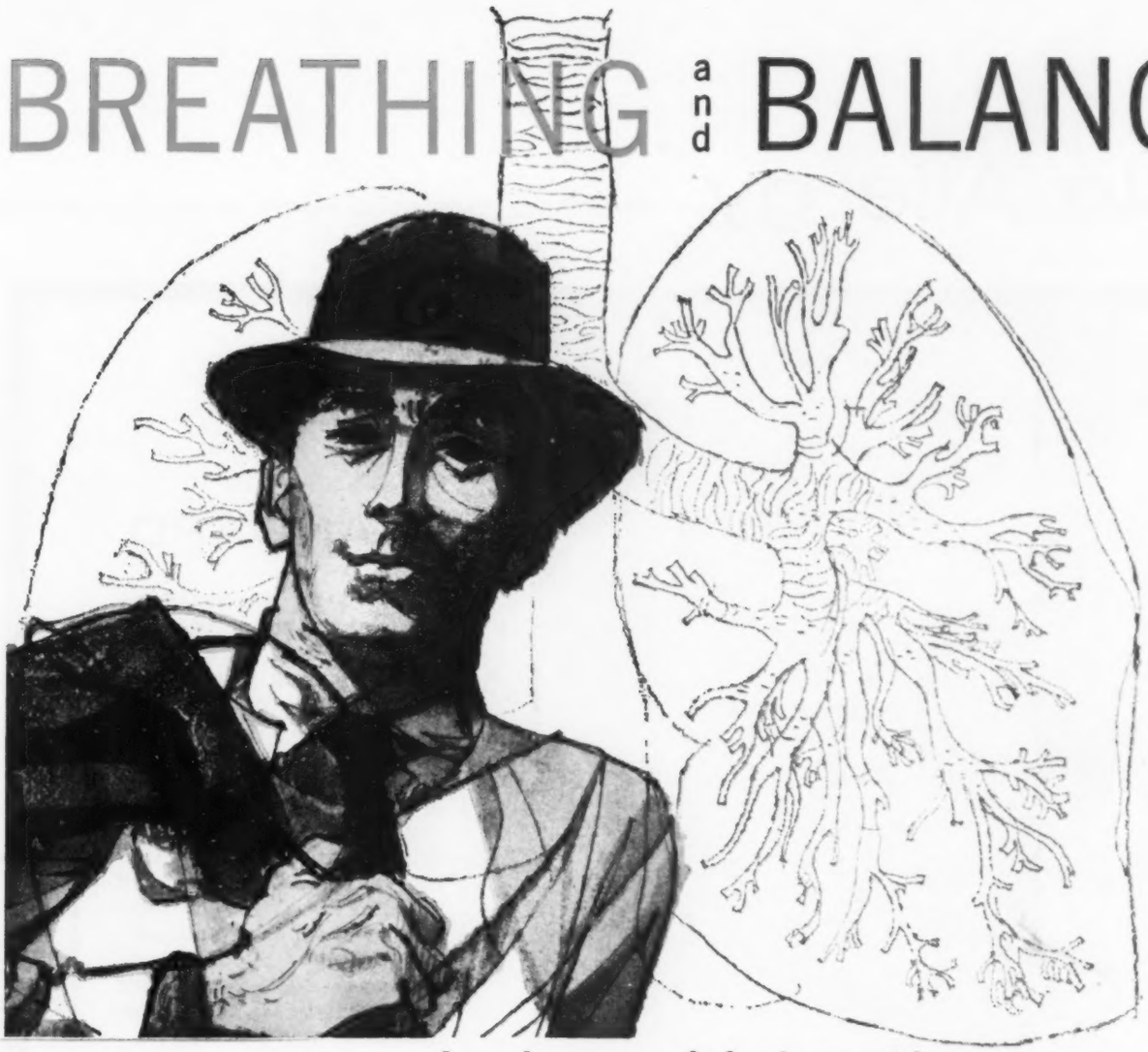

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*Schwartz, E.: New York J. Med. 56:570, 1956.

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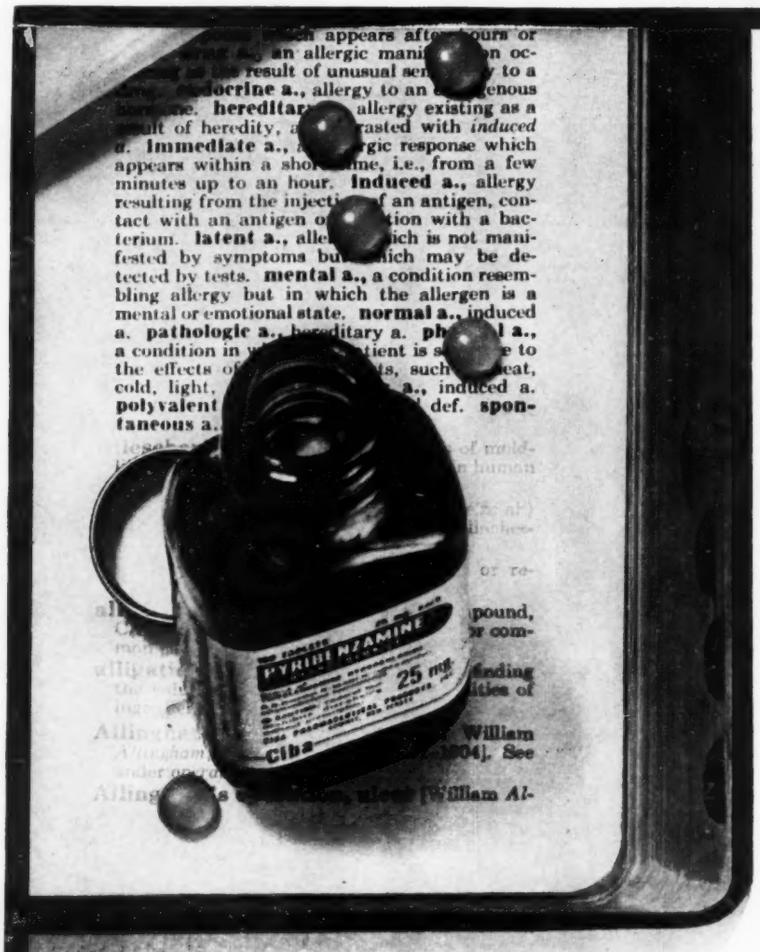

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1. Lovejoy, H. B., Feinberg, S. M., and Canterbury, E. A.: J. Allergy *20*:350 (Sept.) 1949. 2. Goodman, L. S., and Gilman, A.: *The Pharmacological Basis of Therapeutics*, 2nd Ed., The Macmillan Company, New York, 1955, p. 660.

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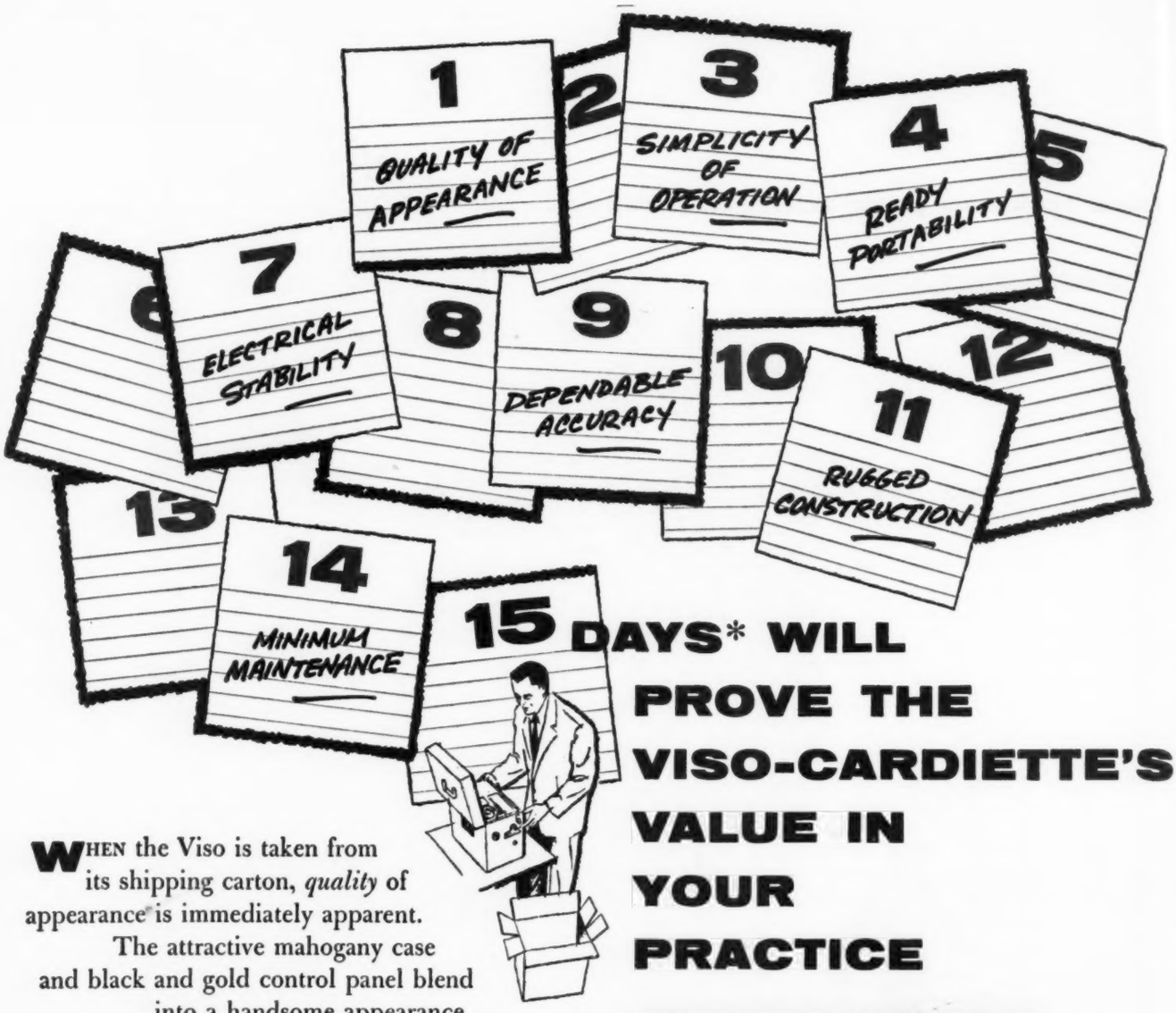

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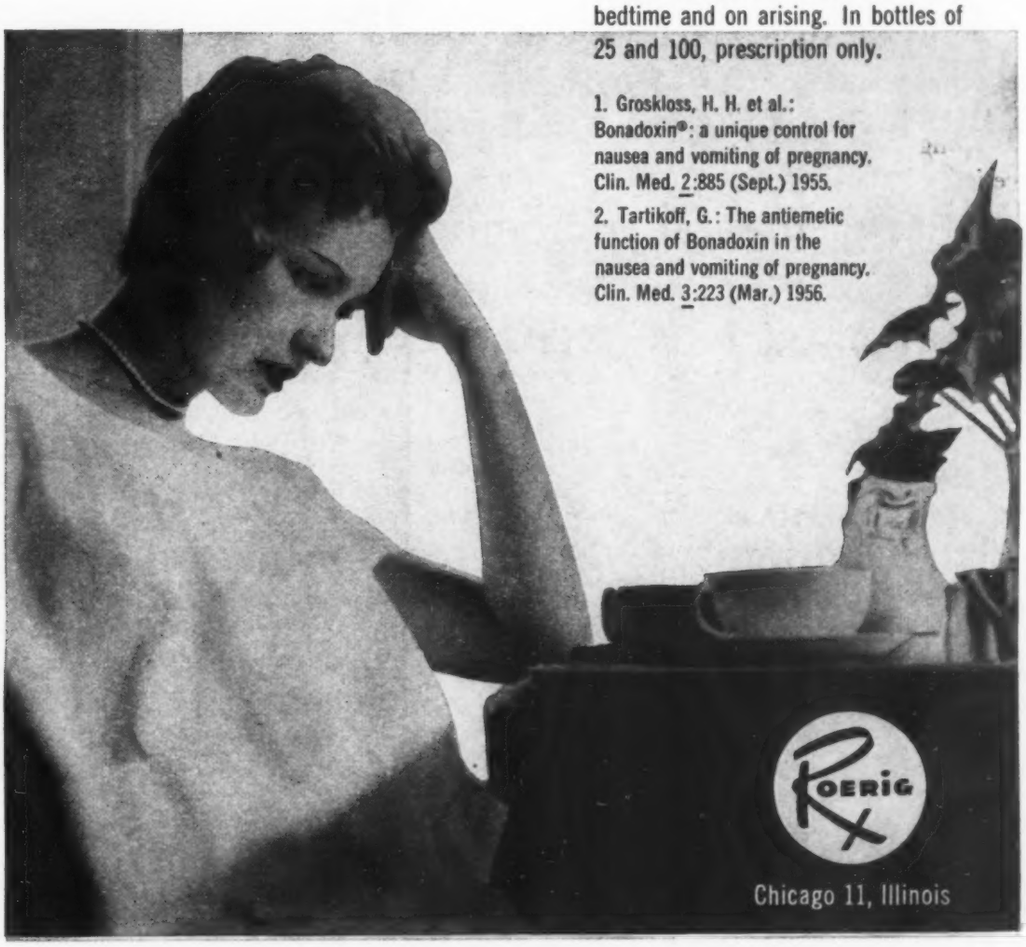

1. Groskloss, H. H. et al.: Bonadoxin®: a unique control for nausea and vomiting of pregnancy. Clin. Med. 2:885 (Sept.) 1955.

2. Tartikoff, G.: The antiemetic function of Bonadoxin in the nausea and vomiting of pregnancy. Clin. Med. 3:223 (Mar.) 1956.

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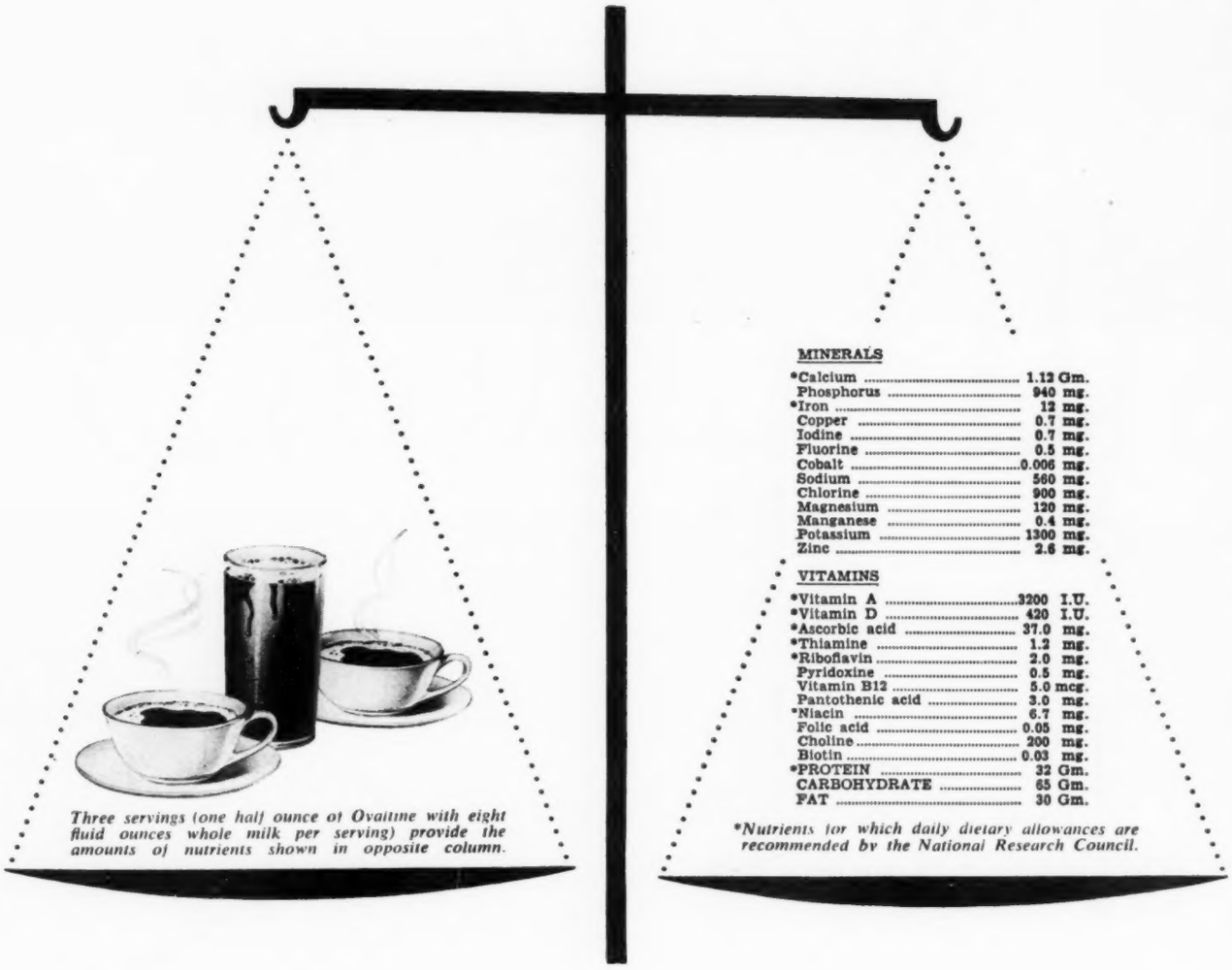

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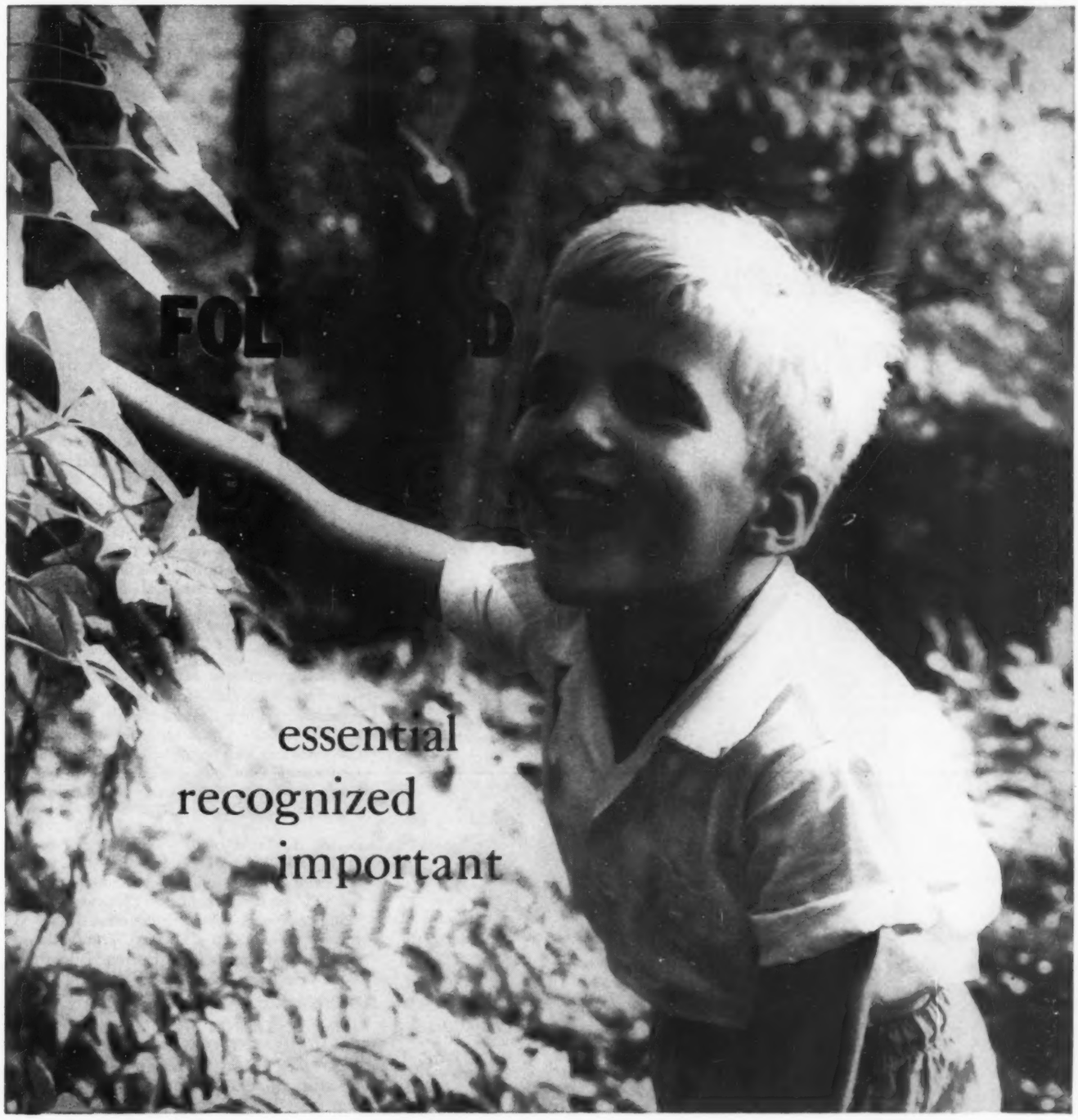

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1. Arnold, H. L., Jr.: Postgrad. Med. *16*:492 (Dec.) 1954.

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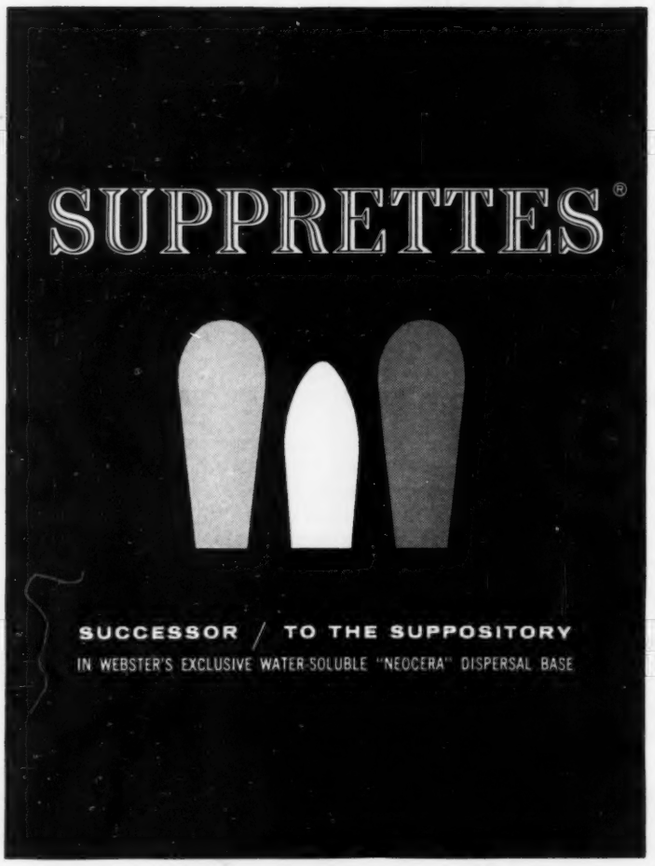

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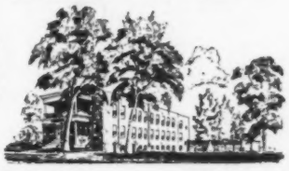

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Fifty million times a day
at home, at work or on the way

There's nothing like a Coke

1. SO BRIGHT IN TASTE . . .
   nothing like it for
   sparkling, tangy goodness.

2. SO QUICKLY REFRESHING . . .
   a welcome bit of quick energy . . .
   brings you back refreshed.

Drink Coca-Cola

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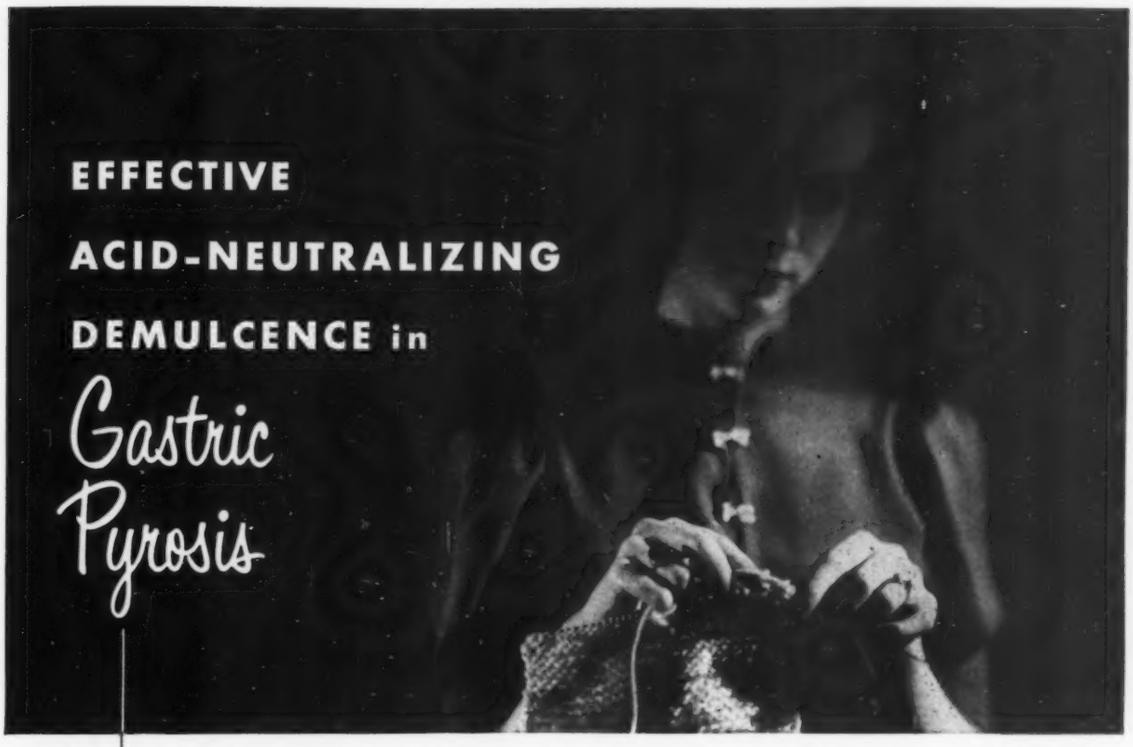

The typical symptoms of burning, acrid eructation, nausea — so frequently encountered during the early months of pregnancy — can usually be relieved promptly by the use of Creamalin.

As a reactive aluminum hydroxide gel, Creamalin exerts a rapid and sustained acid-neutralizing effect and also provides demulcent protection of the mucosa.

Creamalin may be taken with safety throughout pregnancy since it is not absorbed, can not cause fluid retention or weight increase.

Creamalin is also indicated in peptic ulcer and recurrent gastritis with hyperacidity.

Creamalin®

BRAND OF ALUMINUM HYDROXIDE GEL

LIQUID—bottles of 8 and 16 fl. oz.

TABLETS—bottles of 50 and 200.

CAPSULES—bottles of 100.

Correct Pregnancy Anemia with **FERGON®**

WELL TOLERATED IRON

Tablets (5 grains) • Elixir (5 grains per teaspoonful)

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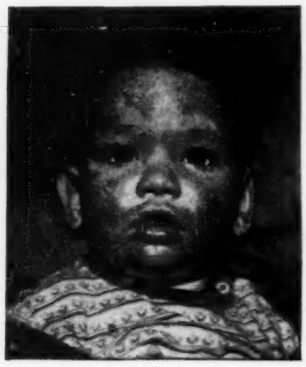
Creamalin and Fergon (brand of ferrous gluconate), trademarks reg. U.S. Pat. Off.

MEAD

in the management
of your food-sensitive
patients, specify



LIQUID **Sobee**®

hypoallergenic soya formula milk-free

a soybean protein food for sound nutrition

When you specify *Liquid* Sobee, the eczema and gastrointestinal disturbances caused by milk allergy are usually promptly relieved. These disturbances, when due to other food allergens, are also usually relieved by using *Liquid* Sobee as the basis of an elimination diet. *Liquid* Sobee is exceptionally well taken and well tolerated. Stools are satisfactory; diaper staining is no problem.

"Thermo-flash" sterilization gives *Liquid* Sobee a pleasant, bland flavor . . . attractive, light color . . . permits maximal preservation of amino acids and important B vitamins.

In a study reported by Kane,* babies on Sobee showed:

Satisfactory growth and nutrition . . . 99% relief of eczema, 90% relief of gastrointestinal and/or non-dermatologic symptoms . . . excellent acceptance.

*From an exhibit by Sydney H. Kane, M.D., at the American Medical Association meeting, Atlantic City, N. J., June 6-10, 1955.

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